Telephony.

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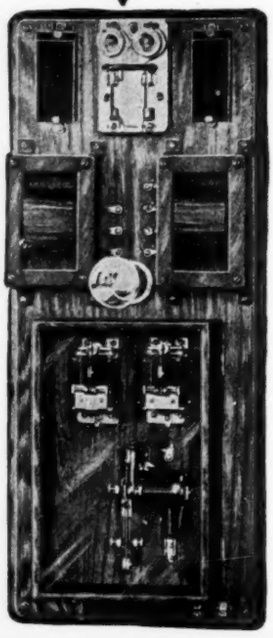

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Telephony.

THE AMERICAN TELEPHONE JOURNAL

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By the Way—

Men who scheme and strive for a business monopoly are actuated by the same selfish motives that drive those who constitute an autocracy in government.

The people hate the monopoly idea as much as the autocracy idea, and naturally, too, for both are inherently poisonous to true democracy.

Neither can flourish in the United States if the people are to continue to rule. If the Bell telephone organization continues to plot for a monopoly it should move to Berlin where autocrats still rule the roost.

The Other Fellow.

A great deal has been said about the lack of interest and enthusiasm on the part of the owner of the smaller telephone exchange. It has been found, further, that this same lassitude extends to all forms of public utility service.

An investigation would show that the milkman, butcher, grocer, laborer, clerk, manager, and banker, each in turn, envy the other fellow, and each secretly feels that if he had only gone in another business, he would find that mysterious happiness called success.

The successful corporation lawyer envies the corporation president and wishes he could give up the humdrum of the law and have nothing to do but buy materials, manufacture something, collect the money and be really happy. The small telephone man who, secure in his business and by a life of thrift, has gathered about him much property at a low capitalization, reads of the big telephone man and believes there he would find the mysterious content.

Take a typical small exchange of 635 subscribers. By earnest, hard work, total obligations of the company have not exceeded $32,000—something like $50 per station. The income from this plant for one year was $12,000, or a gross income percentage of 37.

It is not hard to see that a gross earning of 37 per cent. on the money invested will result in a fine net earning. As a matter of fact, this company has a net income of $4,976, or 15 per cent.

Compare the result with that attained by the largest telephone company in America and the most successful one, operating in New York City and outlying neighborhood. In 1915, this company operated 1,075,000 telephones, and its obligations were close to $263,000,000, or $250 a station.

The gross earnings of the company for that year were practically $50,000,000, or 19 per cent. on the total investment. The net income was $19,000,000, or a little over 7 per cent. To earn 7 per cent., and keep up with stupendous public demands such as have come and are still here owing to the great w[illegible] is a task which no easy-going telephone man, secure in a smaller locality, can begin to appreciate.

It must be borne in mind that in earning 7 per cent. upon the property, this great company has a toll earning equal to the American Telephone & Telegraph Co., which extends all over America. Message tolls reached over $11,000,000, while $5,000,000 were collected from public pay stations, paid by people who do not even live in the community. Each subscriber station represents a gross earning of $30 for rentals and $17 for tolls and kindred service.

The small exchange, in earning 15 per cent. upon the investment, had only to charge each station an average rental of $15.50 and collect $2.85 for tolls.

The small exchange really lies in a mere stable community and the management does not have to so strenuously collect money from fly-by-night subscribers. The people are more thrifty. They have more real money and conservatism is the rule.

The ownership of a 365-subscriber telephone system, paying a living salary and earning 15 per cent. upon the money invested—certain of it—surely should not be envious of any other thing on earth.

The man who can earn 15 per cent. upon an investment in a small community has no reason to be ashamed of his achievement or any occasion to envy the largest and most wonderful enterprise which struggles to earn 7 per cent. upon the money entrusted to it.

New Exchange at Dixon, Illinois

Description of Dixon Home Telephone Co.'s New Building and History of the Organization and Development Given in Booklet Issued by Stromberg-Carlson Telephone Mfg. Co.—New Central Energy Equipment Installed

The Dixon Home Telephone Co., of Dixon, Ill., is an outgrowth of the Lee County Telephone Co., which was organized by Louis D. Pitcher in 1896. The latter was the first company to furnish telephone service throughout Lee county.

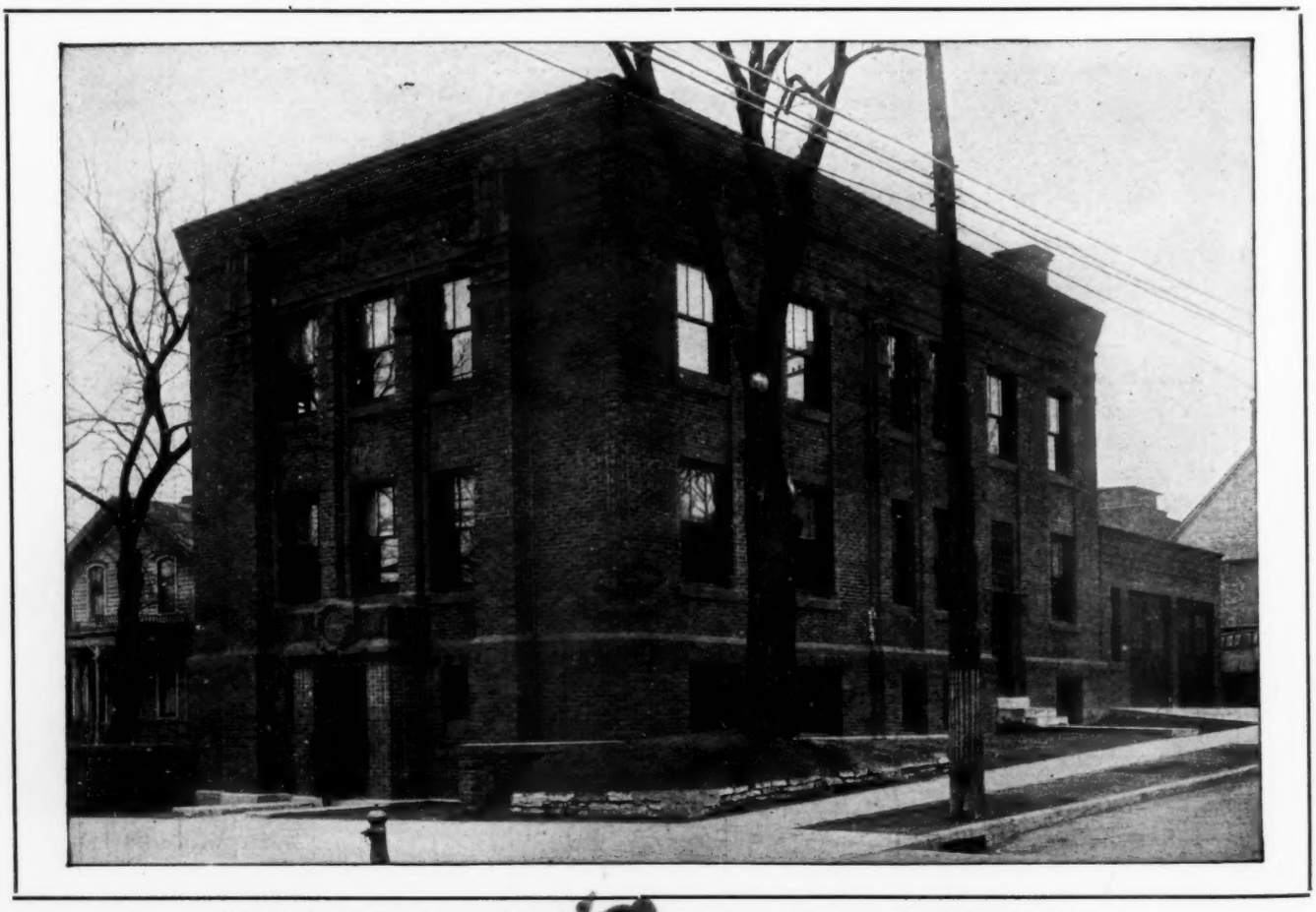
Upon the organization of the successor company in 1904, the interests of the Lee County Telephone Co., outside of the city of Dixon and the adjacent rural section, were disposed of and the Dixon telephone system entirely rebuilt. At this time a new Stromberg-Carlson central office equipment was installed. The reconstructed exchange operated in competition with the Central Union Telephone Co. until 1912, when the local Bell exchange was purchased, dismantled and the operation of the long distance lines taken over.

On January 15, 1916, the exchange building was swept by fire and all of the central office equipment and records were destroyed. Notwithstanding this serious handicap the operation of the system was resumed in temporary quarters with emergency equipment 13 days after the fire. The permanent installation of a new and thoroughly modern Stromberg-Carlson central exchange equipment has now been completed and is giving service to more than 2,500 subscribers in Dixon and the outlying rural district. The popularity of the service is evidenced by the fact that there is one telephone to every four persons in Dixon.

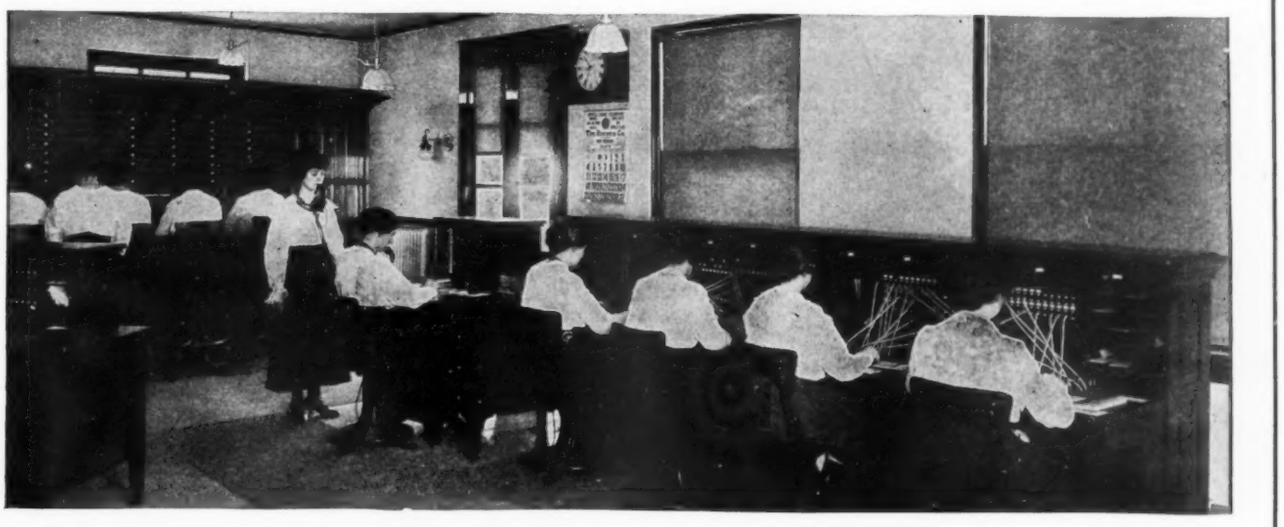
Louis D. Pitcher.

The organization of the Dixon Home Telephone Co. is headed by President J. C. Flowers, who is also president and general manager of the Premier Motor Corporation of Indianapolis. The vice-president is E. N. Howell, of the E. N. Howell Hardware Co., of Dixon. C. B. Cheadle is secretary and also holds the same office in 14 other telephone companies in Illinois and Iowa. W. C. Durkes, president of the City National Bank of Dixon, is treasurer.

Louis D. Pitcher, managing director of the company, has been connected with



New Exchange and Central Office Bui[illegible] of the Dixon (Ill.) Home Telephone Company.



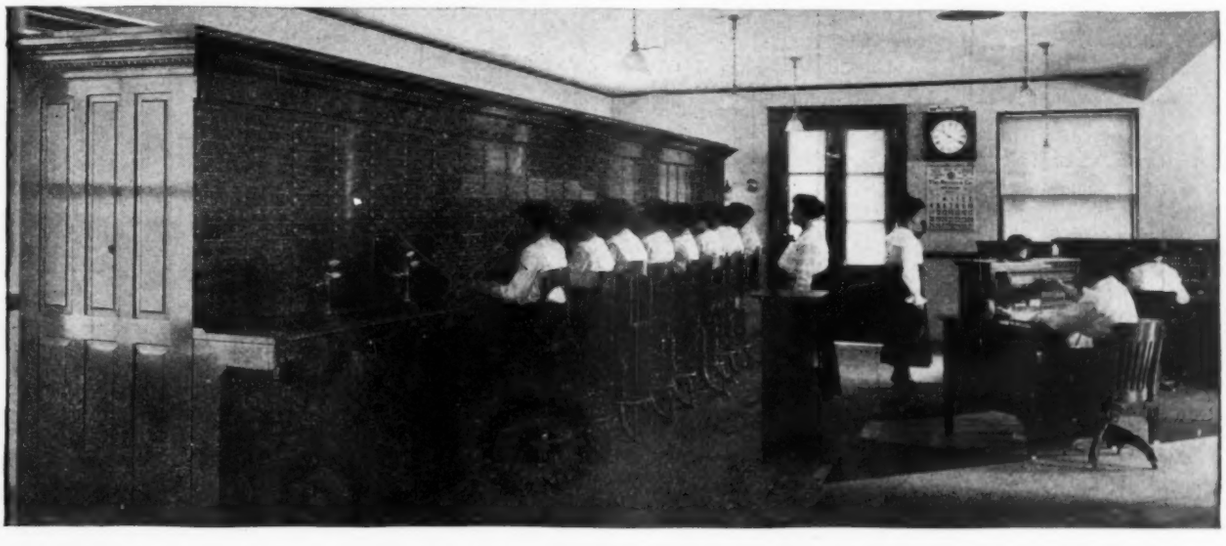
View of Operating Room of Dixon Home Company Showing the New Toll Switchboard.

the Dixon Home company and its predecessor for the past 21 years, holding all positions from groundman up to his present position. He has also assisted in the organization and financing of several other companies.

Mr. Pitcher has been active in state association work and is now a director of the Illinois Independent Telephone Association. He is active in civic affairs and is president of the Dixon Masonic Building Association and secretary of the young men's branch of the Dixon Chamber of Commerce. He is a 32nd degree Mason, a Shriner and an Elk.

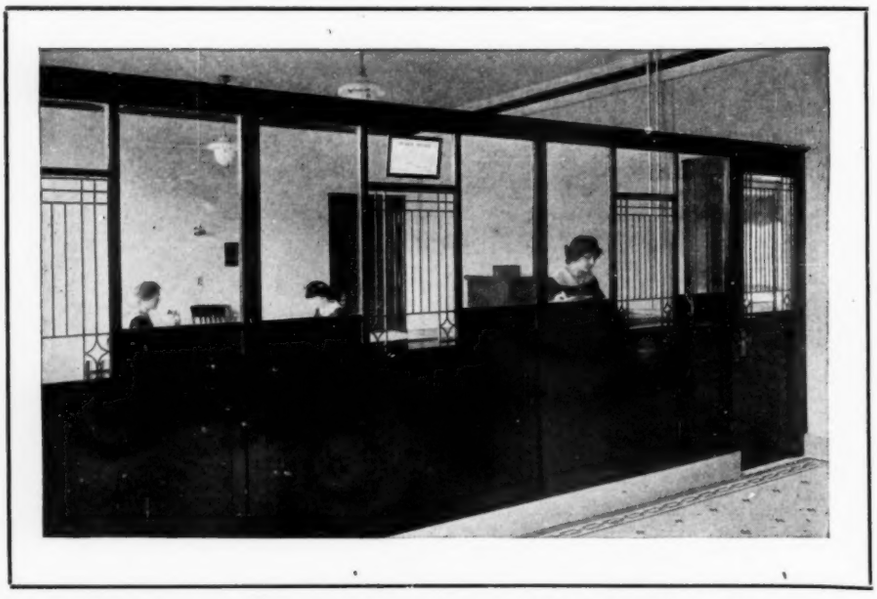
Directors' Room and Office of Manager Pitcher.

This building, which is conceded by telephone men throughout the country to be one of the finest of its kind, was designed by N. Max Dunning, of Chicago, one of



Main Switchboard of the Dixon Home Company and Chief Operator's Desk.

the leading architects of the Middle West. It has an exterior of rough faced brick, shading from red to a dark brown with buff-colored mortar joints and dark red terra-cotta trimming. The



Commercial Offices of the Dixon Home as Viewed from the Lobby.

building is fireproof throughout, no wood except the trim having been used in its construction. The floors in the vestibule and public office are of tile and those in the remainder of the building are of concrete with a special floor treatment.

The public entrance to the building is on the ground floor, opening into a small lobby from which stairs lead up to the public offices on the main floor where a bank rail separates the office from the public space. The directors' room and manager's office open directly off the public space. A stenographer's room adjoins the manager's office. The woodwork in the offices is solid mahogany, while that in the remainder of the building is red birch with mahogany finish.

On the main floor there are two folding door telephone booths for long-distance service and two others on the ground floor for public pay-station service at night when the commercial offices are closed. Iron grille doors prevent access to the commercial office at such times at the same time removing the privacy which ordinary doors would give to prevent loitering. The employes' entrance at the side of the building enables the employes of the commercial, traffic and line departments to enter or leave their quarters without going through any of the other departments.

The second floor of the building is used exclusively for the traffic department. On this floor are located the operating room, locker room and a large club room for the operators. The club room includes a kitchenette fully equipped with dishes, a gas stove and all necessary cooking utensils, so that warm lunches may be served. Folding tables and chairs are furnished to accommodate a party of 30 persons. The lavatory on this floor is finished in white marble and includes a shower bath for the use of operators during rest periods.

A garage at the rear of the building accommodates the company's motor truck, troubleman's roadster and motorcycle. The basement, which is entered either from the garage or the front vestibule, contains the supply rooms, battery room, cable tunnel and Dunham vapor heating plant. The heating system is electrically controlled by a thermostat in the operating room so that an even temperature is maintained day and night.

The local subscribers' lines are interconnected upon a Stromberg-Carlson central energy lamp signal multiple switchboard which includes every modern feature of proven value. It is equipped for present requirements to serve 1,400 lines, but is designed so that the capacity can be easily increased to 4,800 lines as the growth of the system demands.

When a subscriber lifts the receiver of his telephone from the hook in making a call, the action causes the illumination of two small incandescent lamp signals on the switchboard, one of which is directly in front of the subscriber's operator and the other in what is technically known as a concentrated lamp multiple. This is arranged so that any one of three operators can answer the call and it has been found that over 35 per cent. of the calls during the busiest hours are answered under the teamwork plan. In other words, 35 per cent. of the calls are answered with greater speed than would be possible if this improvement had not been added.

The connection between any two separate lines is made by means of a pair of flexible cords terminating in plugs designed to fit the terminal jacks of the lines with great accuracy. Each operator has 17 pairs of cords before her, with which she makes the connections for the subscribers whose lines terminate in her position. The circuits of these connecting cord pair equipments include a number of the latest improvements in telephone switchboard manufacture which are designed to increase the speed and accuracy of the service

Interior View of the Commercial Offices of the Dixon Home Telephone Co.

by lessening the work required on the part of the operator in handling each call.

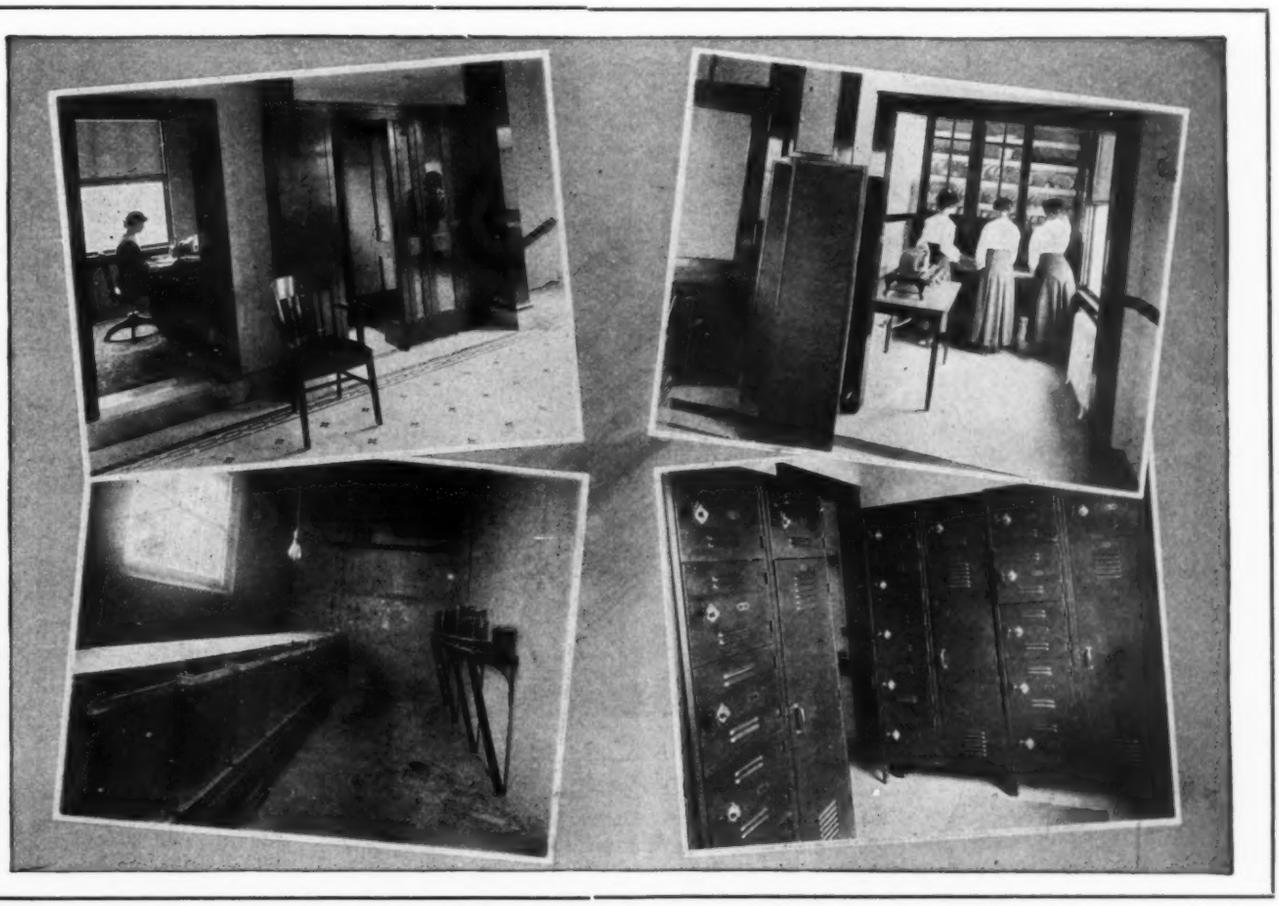
To answer a call the operator picks up the answering plug of the cord pair selected and inserts it in the terminal jack of the calling line which is directly over the associated line lamp signal. This action automatically connects her talking set to that cord circuit and provides a talking connection with the subscriber.

Luncheon in the Operators' Modern and Attractive Club Room.

After ascertaining the desired number, the operator takes the calling plug of the cord pair used and touches its tip to the called subscriber's line jack. If the line is busy, she hears a distinctive click, which warns her that others are using the line. If the line is disengaged, she inserts the plug in the jack. This action automatically disconnects her talking set from the line and prevents any subsequent listening to the conversation between the connected parties.

The insertion of the calling plug in the jack also starts the automatic ringing attachment which rings the called subscriber's bell intermittently and at regular intervals, without further attention from the operator. The ringing is stopped immediately when the called subscriber lifts his receiver to answer the call or when the party calling fails to get a response and hangs up his receiver. During the interval when the subscriber's bell is ringing, the calling party hears a distinctive ringing tone which indicates that his wants have been properly attended to.

Another feature which is incorporated in the new switchboard is the flashing recall system. This is for the convenience of subscribers desiring to make successive calls rapidly and eliminates the "wiggling" of the hookswitch to re-



View from the Lobby Showing Booths and Stenographer's Office, Kitchenette, Main and Auxiliary Storage Battery, Operators' Lockers.

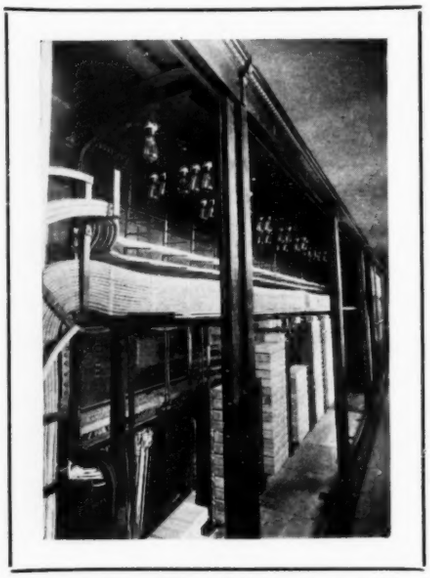
gain the attention of the operator after finishing a conversation with another subscriber. To operate the flashing recall the switchhook is pressed down but once after talking. This causes one of the red cord circuit supervisory lamps to flash rapidly until the operator again answers. It is only necessary for the subscriber to wait a moment, as the signal is a prominent one and cannot fail to compel immediate attention.

Each operator's position is equipped with electrically operated counters which automatically register every incoming call answered in that position on meters which are located on the manager's desk. These meters show at a glance the exact number of calls handled by each operator and enables the management to distribute the work of the operators equally, thereby giving all subscribers uniformly good service. To further assist in the supervision of the operating force each operator's position is equipped with pilot lamps visible to the chief operator, which indicate the time taken to answer calls and to effect disconnections; multiples of these pilot lamps also appear on the manager's desk.

All toll and long distance calls for points on both the Independent and Bell lines are handled on a separate toll switchboard which is also located in the operating room. This switchboard is of the lamp signal type and is equipped with every device that will improve the quality of the company's service.

It resembles the main board in appearance but is somewhat lower since no multiple jack space is required and has deeper keyshelves to provide more writing space for making out message tickets. It is provided with pigeon holes for tickets and book stalls for route and tariff books. Calculagraphs which accurately record the beginning and ending of conversations and automatically calculate the elapsed time are used for basing all toll and long distance service charges and to prevent errors and disputed tickets.

The responsibility for the proper operation of all lines and apparatus rests upon the wire chief, whose office is located on the ground floor in the terminal room. His desk is provided with a complete testing equipment whereby he is able to determine the nature and approximate location of any fault in either the lines or apparatus.



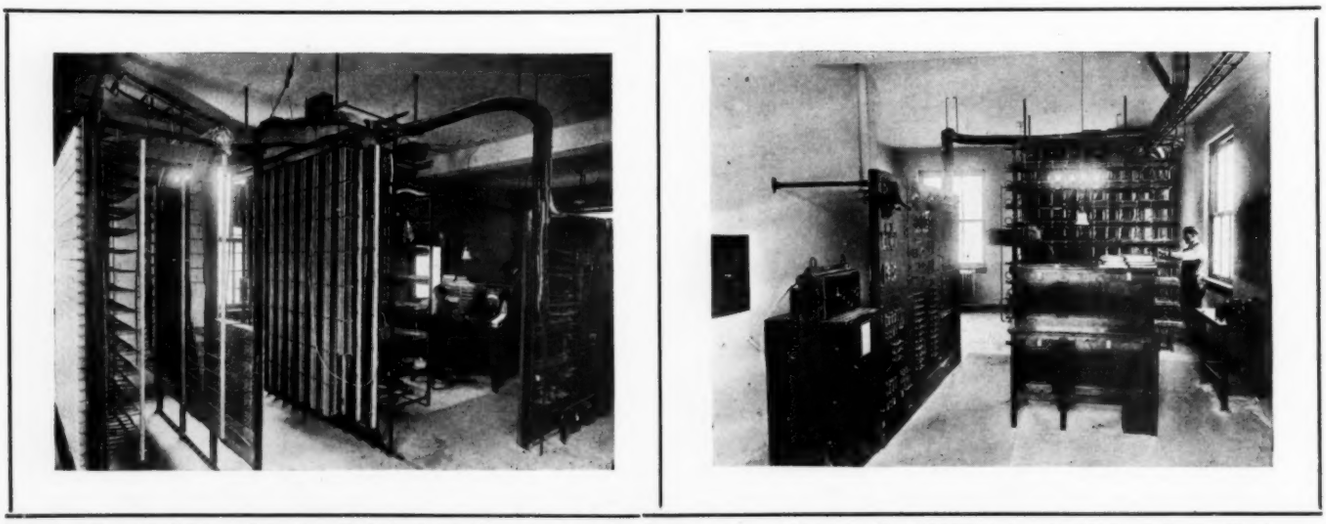
Rear View of the Main Switchboard.

All lines enter the exchange through lead-covered underground cables and terminate on terminal racks which include the lightning arrester and fuse equipment which protects the switchboard apparatus from damage resulting from lightning near the lines or from accidental contact between telephone and power lines. The frames also provide a systematic and conveniently accessible point of junction between the street cables and the switchboard cables.

The exchange power plant includes a storage battery which furnishes all power for talking and signaling purposes. It has a reserve capacity sufficient to operate the exchange continuously for 72 hours with all outside sources of power cut off. In addition to the main storage battery there are two smaller sets of batteries which are used for toll and long distance connections, for which a higher voltage is required. The batteries are charged by means of a mercury arc rectifier and are controlled by a power switchboard which contains all of the necessary switches, meters and fuses.

The equipment of the manager's office consists of a duplicate set of all pilot lamps on the main switchboard so that the manager can observe the quality of the service at all times, likewise message registers which meter the calls in each position. Observation lines lead from the manager's desk to all operators' talking sets so that the work of any of the operators can be closely supervised, when necessary, for the good of the service and the greater satisfaction of all subscribers.

The early part of this month the Dixon Home company had an "open house" to its friends and patrons and distributed souvenir booklets descriptive of its new system.



View in Terminal Room Showing Distributing Frame and Cable Racks—Power Control Switchboard in the Dixon Home Exchange.

Extensive Improvements for Williamsport, Pa., Exchange.

W. P. Wilson, manager of the Williamsport, Pa., office of the United Telephone Co., announced recently that the business office, terminal quarters and exchange will be moved to the Larrivee building on Pine street early in September.

An expenditure of $25,000 has been authorized for improvements which will add materially to the efficiency of the service. An order has already been placed for Kellogg equipment of the latest type.

During the past few weeks the United Telephone Co. has constructed a new cable to South Williamsport, which also is adding to the efficiency of the service.

"Telephony's" Home Study Course for Telephone Men

A Complete Presentation of the Principles Underlying Modern Telephony in All Its Branches—Arranged Systematically So That Regular Reading and Faithful Study Will Qualify Ambitious Men for Higher Positions—Prepared Under Supervision of Stanley R. Edwards—This Section Written by Jay G. Mitchell

Quiz Questions on the Preceding Installment.

748. Into what two general classes may practically all toll trunks be divided? Why are service toll trunks not usually multipled at the local switchboard? Does the local operator ring, ordinarily, on the recording trunk circuit?

749. What condition is imposed on the recording trunk operation by multipled recording positions on the toll switchboard? Why is it necessary for the trunk signal to be returned to normal whenever any recording operator answers a trunked call?

750. Describe the operation of the relay *C* in Fig. 231. Why should the energizing circuit for the trunk lamps be kept open after the recording operator has removed the plug and before the *local* operator has disconnected from the trunk multiple?

751. What is the function of the relay *B* in Fig. 231? Why is the relay *C* locked in the operated position when the recording operator answers?

752. What are the limitations of the three-wire recording trunk circuit? Why may the three-wire trunk circuit not be used for recording when the local office is at a distance from the toll switchboard?

753. Outline broadly the essential difference between two-wire and three-wire common battery local circuits.

754. What is the difference between the circuit shown in Fig. 232 and the one shown in Fig. 231?

755. Why is the relay *C* retained in the operated position after the recording operator has withdrawn the plug from the trunk jack and before the *local* operator has disconnected from the trunk multiple? What would be the result if this were not done?

CHAPTER XXVI. The Multiple Toll Switchboard (Continued).

756. *Design of recording trunk circuit for equipment having differential line relay.*—It will be remembered that in the cord circuits that must be used with the differential line relay circuit, the non-grounded terminal of the battery is connected through separate relays to both sides of the local cord circuit. The current flow through the relay connected to the tip side of the cord circuit operates the differential line relay. The current flow through the relay connected to the sleeve side of the local cord circuits is the supply of operating current to the local telephone transmitter.

In designing a recording trunk circuit to be used with local equipment in which

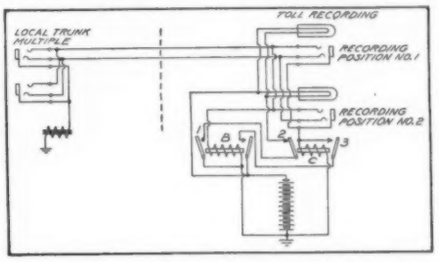


Fig. 233. Simple Recording Toll Trunk for Multipled Recording Positions—Differential Line Relay Local Circuit.

the differential line relay is employed, therefore, it is necessary to make somewhat different arrangements than are required with the ordinary two-wire local common battery equipment.

757. *Operation of simple recording circuit with equipment having differential line relay.*—A simple recording trunk circuit which may be employed with local common battery equipment using the differential line relay is shown in Fig. 233. The insertion of the local calling plug into the trunk multiple creates a path for the flow of current through the tip side of the trunk at the local position, the tip side of the trunk at the recording position, and the winding of the relay, *B*, to to the common battery.

As a result of this flow of current, the relay, *B*, operates its armature and the relay contact spring, 1, completes the circuit for energizing all the trunk signal lamps in parallel through the normally closed spring contact, 2, of the relay, *C*. At the same time relay *B* closes another circuit leading to the contact spring, 3, of relay *C*, in readiness for the operation later of the relay, *C*, by the insertion of the recording operator's answering plug. When any of the recording operators insert the answering plug in the trunk jack in response to the displayed signal, relay *C* is energized by a flow of current from the sleeve of the recording answering plug through its winding to the common battery.

By the operation of its armature, relay *C* opens the energizing circuit of the trunk signal lamps at the relay spring contact, 2, at the same time completing a path for the flow of current from the non-grounded terminal of the common battery through one of the normally open spring contact of relay *B*, now closed, spring contact 3 of relay *C*, now closed, and the winding of relay *C* to the grounded terminal of the common battery.

In other words, the insertion of the recording operator's plug by energizing relay *C* darkens all of the operators' lamps on all the recording positions. It also creates circuit conditions through relay contact spring 3, which will prevent any subsequent display of the trunk signals until the local operator's plug shall have been removed from the trunk jack and another call initiated over the trunk, again energizing relay *B*.

758. *Service toll trunks.*—In the matter of service toll trunks, the only requirement imposed on the circuit design by the use of multiple toll switchboard equipment is the arrangement of the circuits so that the making of a connection with it at any one of the toll switchboard positions will create the proper operating and supervisory conditions at the local board. This is more easily accomplished by the substitution of a relay on the sleeve of the trunk operated whenever a connection is made with the trunk in place of extra jack contacts which are operated by the insertion of the toll operator's plug.

These conditions will be very clear when the simple recording trunk circuits, as they have been outlined for non-multiple toll switchboard service, are adapted for use with the multiple toll switchboard equipment.

759. *Mutiple requirements on trunk circuits.*—In local equipment certain changes are necessary in the electrical circuit conditions whenever a connection is made in one of the multipled jacks of any given line. This change may be accomplished mechanically, as in series multiple arrangements, or electrically. The electrical method is, for many reasons, preferred in the case of toll switchboard equipment.

Each service trunk circuit in the modern mutiple toll switchboard is connected through all its multiple jacks, tip to tip

and ring to ring. In addition, each multiple carries a third contact wired to common relay for the entire series of multiple jacks of one trunk. This relay corresponds in its position in the circuit, to the cut-off relay of three-wire common battery local switchboard equipment. It is energized whenever a plug is inserted into any one of the jacks and its armature establishes the required circuit changes to insure proper supervision of the toll call.

Practically all toll service trunks terminate in a cord and plug on the local switchboard. The operator at the toll switchboard, by means of an order wire circuit, obtains assignment of a trunk number from the local switching operator. The toll line circuit is then connected through a toll switchboard cord pair, to the assigned trunk in the toll switchboard multiple and the local operator is apprised of the seizure of the properly assigned trunk circuit by the toll operator when the trunk disconnect lamp at the local position is extinguished.

The trunk disconnect lamp signal is displayed when the local switching operator has inserted the trunk plug into the local multiple jack of the called subscriber's line. It is standard practice, with but few exceptions, to await the subsequent display of the service trunk disconnect signal at the local switching position before the connection may be removed by the local switching operator.

It is the most widely accepted practice for the toll operator to ring the called subscriber's bell over the service trunk from her position at the toll switchboard. The local switching operator merely inserts the plug of the trunk she has already assigned, into the multiple jack of the called line and after the disconnect signal has once been darkened by the seizure of the trunk by the toll operator allows it to remain until the disconnect signal is again displayed.

It has been assumed also in all the toll trunk circuits described, that the toll operator's cord circuit is arranged to supply operating current as required for the local transmitter over the trunk circuit. This is not by any means universally true,

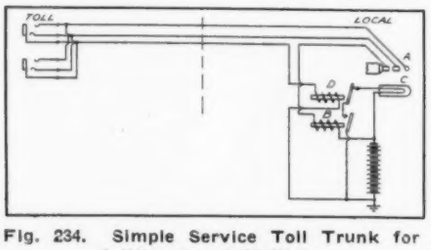


Fig. 234. Simple Service Toll Trunk for 3-Wire Local Multiple.

however, and it will be necessary to describe a series of typical trunk circuits designed, in themselves, and entirely independent of the toll cord circuit to supply the operating current for the local telephone transmitter.

760. *Three-wire service trunk circuit.*—In Fig. 234 are shown the elements of a simple service toll trunk designed for use with any three-wire local multiple equipment provided resistance values are used for the trunk relay windings that

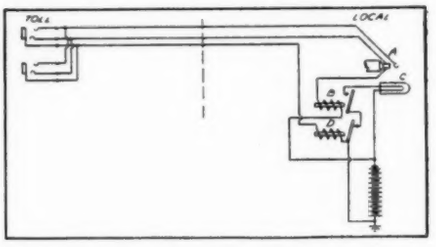


Fig. 235. Simple Service Toll Trunk for 2-Wire Local Multiple.

are suitable for the local circuit conditions.

When the toll operator has secured a trunk assignment from the local switching operator, she inserts the local plug of the toll position cord pair into the assigned trunk jack while the local switching operator inserts the trunk plug into the local multiple jack of the called subscriber's line. The insertion of the trunk plug into the multiple jack of the called local line completes a path for the flow of current over the third strand of the local line multiple jack, the third contact of the trunk plug, the winding of the local cut-off relay, and the winding of the trunk relay, *B*.

As a result, relay *B* is energized and its armature completes the path for the flow of energizing current through the disconnect lamp, *C*, at the local switching position.

When the toll operator inserts the plug into the designated trunk jack, however, the path is completed for a flow of current through the third strand of the *toll* position cord, the third contact of the toll cord plug, the third, or sleeve, contact of the trunk multiple jack and the winding of the trunk relay, *D*. The energization of *D*, and the resulting operation of its armature, opens the energizing circuit through the disconnect lamp, *C*, darkening it.

The disconnect lamp will subsequently remain dark, therefore, until the toll operator removes the plug from the multiple trunk jack at the toll switchboard. In other words, the disconnect signal on the toll service trunk, with this arrangement, is entirely under the control of the toll operator. After the connection has been established, the toll operator may ring the local station at will.

The current for the operation of the local subscriber's transmitter will be carried to the local line circuit over the service trunk conductors. At the same time the flow of current through the winding of the trunk relay, *B*. and the third or sleeve contact of the plug and local line multiple jack, insures that the engaged line circuit will test busy to all intruding connections throughout the local multiple. The flow of current from the sleeve of the toll cord plug through the winding of relay *D*. also insures a busy test on the engaged trunk multiple jack throughout the toll switchboard multiple.

761. *Simple service toll trunk for two-wire multiple local equipment.*—The method of operation outlined is practically standard for toll traffic. This is true for both incoming and outgoing toll calls. When the local switchboard is equipped with the two-wire multiple form of common battery line circuit, it is necessary to modify the circuit shown in Fig. 234 somewhat in order to conform it to the circuit requirements. A simple arrangement that, with suitable relay resistances, may be used with any two-wire local equipment except the equipment in which the differential line relay is used, is shown in Fig. 235.

The operation of this equipment is precisely the same, in every particular, as that of the three-wire trunk circuit presented in Fig. 234. The only point of divergence is found in the connection of the relay, *B*, to the second or ring strand of the trunk cord instead of the third. This is necessary inasmuch as cut-off relays in the two-wire local switchboards are tapped permanently on the sleeve side of the line circuit. With this arrangement the control of the trunk connection in the local multiple is left entirely to the toll operator as it is in Fig. 234.

(To be continued.)

Addition to Exchange at Newark, Ohio, Nearing Completion.

The work of building an extension to the central office and exchange building of the Newark Telephone Co. in Newark, Ohio, is being rushed and will probably be completed by the middle of September or the first of October.

The building easily adapted itself to a second floor which is being built over the store rooms on the south side of the Arcade. The building was heavily re-enforced with steel beams, and the roof of the new story is already in place, this precaution being taken so the roof of the first story can be taken out and the floor laid. The side walls will soon be in place.

The addition will be 75 feet long and 16 feet wide. A door will be cut in where the toll room now is and the new rooms will quarter the new toll room, rest rooms, Manager C. E. Hollander's office, the office of the manager's clerk, and the directors' rooms.

Additional automatic equipment will be installed and a new automatic toll board. The addition will enable the company to care for between 1,200 and 1,500 new subscribers. The facilities for new subscribers under present conditions would have soon been exhausted.

The New Advertising

Advertising a Powerful Force in Upbuilding Business—New Advertising Characterized by Truth and Honor—Points to be Considered—Paper Presented at Convention of United States Independent Telephone Association

By Roy D. Mock

It is related that a certain telephone man retired from business a few years ago with a very comfortable little fortune of $50,000. He is said to attribute his success in business to his honesty, ambition, industry, and also to the fact that his uncle in Australia died and left him $49,999.

Not all of us can inherit from rich Australian uncles, but all of us can make use of the tools of modern business in building up fortunes of our own. The bookkeeper uses an adding machine, which is one of the implements of modern business. The correspondent uses a typewriter, which is another one of the tools of modern business. The business man who is unusually shrewd goes a step farther and uses the telephone, which in many cases does away with the necessity of using the typewriter at all.

A Tool of Modern Business.

Just as the adding machine, the typewriter, and the telephone are tools with which the modern business man works to handle his business, so advertising is a tool that he can use to help make his business grow bigger and more substantial.

It is no reflection at all on the ages of the gentlemen present to say that most of them can undoubtedly remember when nobody read advertisements except under compulsion.

In those days when a person was describing a particularly long wait, perhaps for a late train, he was pretty likely to say, "I read the magazines and newspapers clear through, *advertisements and all.*" Reading advertisements was the very quintessence in time-killing.

It seems strange, when one thinks of it, that the world should have waited so long for a sane, lucid and common sense method of advertising. Dealers in provisions have always known that people must buy food in order to live. Yet until recently most grocery advertising appeared in a hit and miss fashion and simply stated that this grocer had certain things for sale. If people happened to get hungry some time, they might possibly find the door open if it occurred to them to drop around.

This seemed to be the attitude of advertising. There was no attempt made to encourage purchasing, to tempt jaded appetites by describing special delicacies, to urge an examination of merchandise, a comparison of values and no attempt at cordiality or newsiness.

It should be a matter of regret to us that some telephone advertising is still written along these lines. It simply seems to say, "We have telephone service for sale. Sometime when you happen to think about it, you might be able to persuade us to put in a telephone for you, if we aren't otherwise engaged."

The Old Advertising.

We are here this afternoon to consider for a few moments the subject of the new advertising. Then there must have been an old advertising! Did you ever stop to think what was the first advertisement ever put out? It was undoubtedly a church steeple. The tall spire pointing skyward said plainer than words: "Here is a place of worship."

And did you ever stop to think who was the first advertising man? Advertising men are usually ashamed to admit it, but the first advertising man was undoubtedly a circus barker. He stood out in front of the tent and with a long pole banged on the canvas while with a pair of brazen lungs he called attention to the wonders within. His talk sounded truthful. His exhibits were generally fakes.

In other words, the old order of advertising was deceitful whereas the new advertising is truthful and honorable. According to the old order of things, advertising was a speculation. You closed your eyes, spent your money and maybe got something back. The new advertising is based on logic, on a clear analysis of what must be accomplished, with a thorough understanding of the facilities at hand for accomplishing it. The new advertising is controlled by common sense.

A Powerful Force in Business.

It does not take much discernment to recognize that advertising is a powerful force in the upbuilding of business. There may be other flours just as good as "Gold Medal," but you can't mention the names of many of them. There are numerous breakfast cereals on the market, but there is only one "Kellogg's." There are perhaps 300 different makes of automobiles manufactured in the United States, but you can't name more than half a dozen of them. And those that you will name are the best advertised.

That there are hundreds of different telephone companies in the United States is evidenced by this convention. Yet millions of people recognize only one telephone company. Why? Because that one company has been a consistent advertiser while the Independent forces, sad to relate, have not been.

Advertising in the Independent Field.

It is possible for the power of advertising to weld these Independent forces closer together—to represent them as a unit before the people, to present their just contention that competition in the telephone business as in any other kind of business makes for better service and more advanced progress. That is what the new advertising will do—if you will use it.

To make advertising pay requires more than a mere desire to make it pay. You can't have much fun going anywhere in your automobile unless you know pretty definitely where you are going and the way to get there. You can't make much progress in advertising unless you know what you are starting out to do.

Are you planning on building up a good will asset in the community you serve? Are you after new installations, extension business or toll line business? Then plan your advertising accordingly.

Knowledge is certainly power in advertising—knowledge of what you want to do—knowledge of how to do it. If I were called upon to sound the keynote of the new advertising, I would say it is knowledge—knowledge of what you want to do, and knowledge of how to do it.

Here in Chicago is perhaps the best known mercantile establishment in the world. Some little time ago this establishment desired to enter into a nation-wide advertising campaign for certain of its manufactured products. Before investing one cent in advertising its officers spent time and money to find out the possibilities of this market.

They learned what was the total volume of business they might expect, also how much of it came from communities that they could hope to reach. They calculated their manufacturing facilities and figured their profits per unit. I know they did all this because the work was done by a member of the advertising organization I represent.

Armed with this information, they were in a position to know definitely how much money they could afford to spend for advertising in order to capture their market. This is what we mean by advertising knowledge—getting things down

in black and white before you spend any money.

The accumulation of all this data, of all these facts and figures, comprise what we call an advertising survey. Such a survey, if properly made, becomes the advertising guide for that organization for years to come. It points out the possibilities of the field, shows what can be accomplished, how it can be accomplished, what it will cost. Such knowledge is the very basis of the new kind of advertising.

Making an Advertising Survey.

Before you do any advertising, make a survey. How many people in the community you serve should have telephone service? How many do not have? Know your field.

In getting at such facts a number of questions always arise: How much shall I spend for advertising? How long should my advertisements be? How frequently should they appear? Will it ever prove profitable for me to stop advertising? These are some of the questions that are asked and that a survey attempts to answer. It may be of interest to take up some of these questions in a general way.

How much to spend for advertising is always an important question. Needless to state, it depends upon the possibilities of the business.

If the field is such that the business can be increased indefinitely, the amount of money which can be judiciously spent for advertising is limited only by the amount of money you can get your hands on. Where the field is limited and only a certain amount of business can possibly result, it is obvious that the advertising appropriation should be governed accordingly.

Solving this question is a great deal like dissolving salt in water. You can get the water so full of salt that it will not hold any more in solution. This is what I believe is called a saturated solution. If you put more salt in, it will simply drop to the bottom without being dissolved. If you are spending more money than is necessary to cover your field, you must expect some of your money to drop to the bottom without accomplishing anything.

Advertising Like Medicine.

Advertising is something like medicine. The dose should be governed according to the condition of the patient. If you do not notice any results from a small dose of advertising, try a bigger dose. It is certainly safer to spend a little bit too much for advertising rather than not quite enough.

If you are figuring on making an application for an increase in rates, it is certainly worth something to you to have the people in your community on your side. How much is it worth to you? Put it down in dollars and cents. Then spend that amount of money in good will advertising. Advertising is the connecting link between your business and the public. If the link is broken you might as well hang up the receiver.

Analyze Your Field.

There is a big difference, however, between spending money for advertising and investing money in advertising. A great deal of money is charged up to advertising when it had better be charged to profit and loss.

A manufacturer of high grade automobiles had been spending thousands of dollars a year in magazines which reached every part of the United States. Upon investigating—making a survey—it was found that his cars were on sale in only 14 cities. Obviously, this manufacturer was spending a great deal of his money in advertising to people who could not buy his cars if they had wanted to. His advertising appropriation was cut in half and his money was spent in the towns where his cars were on sale. He got results. Yet he spent less money. Analyze your field. Find out what is good and bad in advertising.

Another question that is frequently asked is how long should an advertisement be. By advertisement I mean not only an advertisement as usually understood, but a form letter, booklet, or a circular. Abraham Lincoln gave the best answer to this kind of a question. He was asked how long a man's legs should be. He replied that after mature deliberation he had come to the conclusion that a man's legs should be long enough to reach from his body to the ground.

Length of an Advertisement.

Your advertisement should be long enough to tell your story. If you can tell your story in six words, then an advertisement of eight words is too long.

An advertisement is like a pole that you might use to knock apples off a tree. If it takes a pole 9 ft. long to reach the apples, then a pole 8 ft. 11 ins. long is not going to help fill your fruit basket. If you need a 9 ft. advertisement, you need a 9 ft. advertisement, so be sure you say enough to tell the whole story. If all I thought I could afford to spend for advertising was a 3 in. advertisement every day in one newspaper, I am quite sure it would be more profitable to run one 18-in. advertisement once a week than it would to follow out a regular schedule of smaller advertisements. And yet I do believe most firmly in persistence. You would get far greater results by having an 18-in. advertisement every day.

If a man were to hit you in the eye, then come back in two weeks and hit you again, you wouldn't be hurt very badly. It might hurt your feelings, but that would be about all. But if he hit you first with his right fist, then with his left and kept on hitting you, you would probably take the count in short order.

Advertising is nothing more or less than hitting the public in the eye. If you allow too great an interval between these hits your public isn't going to notice you. An advertisement once a month for two years won't produce anywhere near the effect of 24 quick jabs at the public within a month. A near knock-out doesn't count in advertising.

How to Write Advertisements.

The question is frequently asked: How should I write an advertisement? To answer this question, even briefly, would require a pretty good sized volume. One of the best writers of advertisements in the United States was once asked his formula for writing an advertisement. He was perfectly honest in his answer. He said: "I steal what I can and write what I have to." That's the shortest course in adwriting I ever heard, and one of the best.

Learn from the experience of others. I would like to say, however, that the most forceful advertising is the simplest. If you write things that only the best educated people can understand, you will have a big majority of the people wondering what it is all about. But if you use short, simple words that even a child can comprehend, you will catch everybody.

One of the strongest things about good advertising is that it is not startling, nor cute, nor clever. The best advertisement is the kind that makes you say to yourself, "Why I could have done that myself." So you could—if you had only thought about it.

Is it ever profitable to stop advertising? It certainly is—that is if you want the business to stop. But many times when you cut down your advertising expense you aren't stopping your real advertising at all. You are simply cutting out a lot of the things that have never proved profitable and never will—things that you call advertising but that are not.

To distinguish between the good and bad in advertising requires a very liberal application of common sense. If you know a man who says his business isn't worth advertising, you had better recommend that he try one last advertisement and advertise it for sale. What good is it to have something to say about your business if you don't say it?

In conclusion I would like to call to mind an important historical event which has its counterpart in present day affairs. The great Persian King Xerxes was marching down from Asia with the mightiest army that ever trod the globe. He was bent on capturing Greece, with its fertile valleys and vast stores of wealth.

But his invasion failed utterly because

a plucky Spartan captain had entrenched himself and a handful of men in a narrow mountain pass which controlled the road to Lacedaemon. The man who was there first had the advantage over a million.

Many of you are today engaged in the conflict with a well organized foe with numbers, vast resources, and skilled generals at his call. Entrenched behind bulwarks of advertising and with right on your side you can win. But it takes courage. It takes grit.

Advertising is no wonder working pill for sick businesses, and lazy thinkers. It won't keep the shebang running itself while the boss takes a year's vacation. But it is sunshine and showers, and fresh air for the healthy business that wants to grow. Do your share and advertising can help you, no matter how big or how small your company may be. The new advertising—advertising that is planned on definite knowledge of what to do and how to do it. The new advertising! Advertising that is based on facts and truthfulness.

Out of the Mail Bag

TELEPHONY's mail bag brings in many interesting letters, but, as might be supposed, none has more red life in them than those received from Joseph M. Graffis, formerly our assistant advertising manager, who has been on the front "somewhere in France" since May. "Joe," as he is affectionately known, is driving a munition wagon, and while his letters are full of graphic color, not all of the contents can be printed for obvious reasons. One of his recent messages showed that the grim business of war had not robbed him of his lively sense of humor. In order to make one letter do for all of TELEPHONY's staff, male and female, he addressed it "Dear Mr. and Mrs. TELEPHONY and Children."

A German shell demolished a stone wall which he was passing at the time and the flying fragments injured his head. He writes: "Today marks the sixth 'ani-day-sary' that I have been confined to my cot with an ear that looks as though a 210 shell had gone off in it. I feel pretty good, however, and the doctor says I'll be O. K. again in about five days.

"Last night the boys went out on a night trip, and, coming back, were almost hit. A big shell landed near the first section, right square in a big house. The Frenchman who was directing the parade jumped out and ran for a dugout, and as the scenery was somewhat changed by the explosion, the boys were lost for quite a while.

The first day we were here we were initiated by shell fire. The big 'peaches' make an awful naughty scream, and as they travel much faster than sound the noise made by their explosion is heard before the whistling stops. One—I think it was a May blossom—landed in some soft earth near a bridge we were crossing and spattered us all with mud. Twenty-nine out of 30 swore they were hit, so evidently one was pretty badly scared.

I attended the funeral of our section lieutenant who had both legs blown off about five inches above the knees. He made one grand fight for his life, but the doctors could not stop the blood flow.

We see some great air battles and some of them bring you to your feet by their daring. When young Whowasit turned a somersault in his aeroplane in Grant Park over a year ago we thought he was some boy, but what ice would such a feat cut out here where they drop backward for hundreds of feet and then turn upside down, sideways in and inside out? We sure are glad to learn that Uncle Sammy is going to send his best re-guards over to the kaiser. It's going to be the turning point. Peace will soon follow. I saw a great attack a few nights ago. The French lost a few hundred feet of first line trenches. It's give one day and take the next.

I got some pictures of telephone systems, etc., over here, which might be of interest to TELEPHONY's readers. Will try to get them off to you before long."

"Over the Plate," Somewhere in France.

In another letter, dated July 10, Mr. Graffis says:

"The weather here is like that of late October—cool, crisp and clear. It's the kind of weather that makes you breath deep and get hungry early. Some of our boys just got back from the front and report that they carried small shells and that all towns are filled with soldiers. The Poilus have been passing camp since daybreak.

The next big scrap will be staged right here. We are getting ready for the final big push (I hope). An American staff was out at our camp today and their chief told us of a big offensive (French and British) starting early tomorrow. The other night our French gunners rained 27,000 shells on the Germans. Tell everyone to write when they can. Girls, the censors pass most everything so you are safe in going the limit."

Mr. Graffis' address, in case any of his friends in the telephone field should wish to write him, is "Joseph M. Graffis, T. M. U. 526, Convois Automobiles, Par B. C. M., Paris, France."

The accompanying illustration shows "Joe," clad in khakis, in the heat of a baseball game in which he pitched for his team against a California unit. The game took place near Paris and shows that the boys are wisely encouraged to have a little American sport along with the grim business of war. Besides, throwing a baseball ought to be good practice for hurling hand grenades.

Ora S. DeVore, writing from the electrical school at the Mare Island Navy Yard, says: "As I have joined the navy, I am out of the telephone work at present, but I will be on your subscription list again as soon as possible, for I enjoy TELEPHONY very much and find it very helpful."

Here's hoping "Jackie" DeVore returns safe and sound to the telephone game after doing his bit for Uncle Sam.

"We believe we are one of the oldest subscribers you have," writes W. A. Wynne, president of the Raleigh (N. C.) Telephone Co. "We believe the best article ever published in behalf of telephony is the one in your journal entitled, 'Successful Management Principles.' Enclosed find remittance for our subscription for another year."

"Enclosed find price of another copy of TELEPHONY," writes T. F. Sargent, manager of the DeKalb (Ill.) County Telephone Co., "as we do not want to miss any of the articles by Mr. McKay or Mr. Mitchell."

"Allow me to extend our thanks for the way you reported the good work of the Southern Indiana Independent Telephone Association," says S. M. Isom, president of the Mitchell (Ind.) Telephone Co. in a recent letter, enclosing his annual subscription renewal. "We appreciate the great help TELEPHONY gives us."

Here is one from Panama. Harry S. Brink, Balboa Heights, in the Canal Zone, sends in his check for his subscription and adds a postscript: "Many thanks for

continuing the publication, as I couldn't be without it. Don't break the link."

Jumping a long way North, here is a message from Halifax, Nova Scotia. J. E. Sheppard, a subscriber, writes: "So far I have not received the last issue of TELEPHONY, and as I saw in another copy some very interesting matter on induction and repeating coils I would appreciate it very much if you would send me another at the earliest possible moment."

"In regard to your magazine I want to say that TELEPHONY is always welcome to me as it always is brimful of interesting news."

"Enclosed please find my check for TELEPHONY to 1918," writes C. M. H. Eyclesheimer, general manager of the Lake Region Telephone Co., Winter Haven, Fla., "I find that I cannot get along without TELEPHONY." Mr. Eyclesheimer's company operates exchanges at Lake Alfred and Auburndale, Fla.

Queer mistakes happen in the rush of wartime. M. H. Leaver, president of the Franklin Telephone Co., Quakertown, N. J., received a Sears-Roebuck catalog in a TELEPHONY wrapper. "The mistake is apparently up to the postoffice department," he writes, "but as I don't like to miss a single copy of the paper, please send me another."

In sending in his remittance for another year's subscription, J. J. Cline, Toledo, Ohio, of the plant department of the Ohio State Telephone Co., writes: "I cannot get along without your magazine. Through its columns I am able to keep well posted on Independent telephony."

"Enclosed find money order for my subscription," says Geo. F. Birch, Peekskill, N. Y. "It's money well spent."

F. R. Brown, Chicago, is one of the oldest—we don't mean his age—subscribers TELEPHONY has. "Enclosed find remittance for another year of TELEPHONY," he says in a letter written July 12. "I have had it with me 17 years and find I still need it all the time. I wish you continued success."

F. V. Newman, secretary and treasurer of the Michigan Independent Telephone and Traffic Association, with headquarters at Grand Rapids, says in a recent letter, "I cannot afford to be without even one issue of your valuable paper."

The Comanche Telephone System, of Comanche, Okla., with true Indian brevity, adds this tense message to a letter enclosing a subscription check: "Send it on. Need it in my business."

"We find both pleasure and profit in reading TELEPHONY," says W. S. Robertson, owner of the Argyle (Minn.) Telephone Co.

In a letter enclosing remittance for his subscription for another year, E. T. Haroldson, Manson, Iowa, adds: "I want to thank you for all the good reading I have found in TELEPHONY."

"For some reason my copy of TELEPHONY for June 30 failed to reach me," writes Ernest J. Miner, Springport, Mich. "Please send another copy, as I do not want to miss even one number."

"I cannot afford to miss even one copy of TELEPHONY, especially the appraisal and valuation articles by C. W. McKay," says Monroe Johnson, manager of the Emmetsburg (Iowa) Telephone Co.

In sending in his check for a year's subscription, S. G. Knee, of Emmett, Idaho, writes: "Here you are, some late, and I feel I owe you more. You see I am not at the present in the telephone business, but living on a ranch and don't get to town often. I take TELEPHONY though for old times' sake and to keep in touch with what is going on."

Frank D. Moor, manager of the Southern Telephone & Construction Co., Tallahassee, Fla., "a Home company owned and operated by Home men," in a recent letter says: "We don't like to be without your valuable paper a single week."

"TELEPHONY is indispensable to those who wish to keep up with progress in the telephone art," writes W. E. A. Nottorf, superintendent of the Kansas Telephone Co., of Lawrence, Kans.

"I have found your magazine very helpful in the past," writes James T. Young, of Haddonfield, N. J.

Percy C. Harmon, New Richmond, Wis., sends in a new subscription, and adds: "I have come back in the telephone game after being out more than a year and can't be without TELEPHONY."

"W. R. Journey, manager of the Citizens' Telephone Co., Higginsville, Nev., requests a change of address for one of his employes, and explains: "We have a new chief operator and I want her to get the benefit of your valuable paper."

Practical Subjects — Discussions

Lighting Protection of Farm Telephones—Some Experiences.

Is it advisable to place a lightning arrester at each farm telephone?

Having asked this question, I will relate some of our experiences and would be glad to hear from others.

During the summer of 1916 the electric light wires went down across one of our farm lines at a point about three miles from central—the central office is protected by heat coils and carbons at the distributing frame and by 7-ampere fuses and carbons at the cable pole. There were 11 subscribers on about eight miles of line, No. 1 being towards central from the break and No. 2 at the break in the light line.

About seven miles out, the line branches in three directions, each being about one mile long. Telephones Nos. 1 and 9 were provided with carbon arresters separated by the usual strip of mica, but the other telephones were not protected at all.

The fuses were blown at the central office and on the cable pole; also the carbons were fused there and at telephones No. 1 and No. 9. The receivers were burned out at No. 1 and No. 9. The woodwork on the telephone at No. 9, five miles from the trouble, was set on fire and the wall-paper blackened and scorched to the ceiling. The telephones without protectors were not damaged at all

Benzonia, Mich. G. L. Williams,
Mgr. Benzie Consolidated Telephone Co.

Sunshine and Shadows Along the Telephone Trail.

BY WELL CLAY.

A shadowy shape in the moonlight
Our tented auto stands.
There's a ripple of light on the water;
A lapping of waves on the sand.

A rustle of leaves in the forest;
The cry of a whippoorwill;
A siren-songed mosquito
Intent on taking his fill.

A patter of feet on the pathways
Whereon the night prowlers tread;
Embers have turned to ashes—
Time to be in our bed.

'Tis a yielding again to the yearning
Planted so long ago
In the breasts of our fathers before us—
Wanting to be on the go.

When the sun has ripened the harvest
And blackbirds are thick on the corn,
'Tis then we irk of the office—
We guys that are country born.

'Tis then that fish taste the sweetest,
Hurried from hook to the pan;
Murphies full dressed from the ashes,
And coffee that's cooked in a can.

A whiff from your pipe in the gloaming,
Lying full-stretched on the sod,
The cares of your job gone glimmering—
Full fed and thankful to God.

The gypsies in the olden time who used to camp down on the common with their bunch of horses, their fortune tellers and their general air of mystery and romance used to appeal almost as strongly to the average small town boy as the yearly circus.

How he longed to live the life which they seemed to enjoy so much. No cares, no work—just fun. New towns every day or so and unending *going somewhere.*

That was when the weather was fine, but when the cold rains beat against the

windows and the wind howled over the roofs in the early winter days, we were just as well satisfied that we had stayed at home and helped dig the potatoes.

In these modern days, parties can go "gypsying" with all the ease and most of the conveniences that are available at home. The advent of the auto which can be converted into a tented boudoir in a jiffy has made it possible for folks, even of moderate means, to get away to the quiet backwaters of life and to eat and sleep where inclination suggests or night overtakes them.

What is more to be desired in these strenuous times than to be able to slip away for a day or so from the job and visit our old Mother Nature again? One driving along lonely country roads turns the corner and, down by the little brook or by the lake shore, one comes across these modern gypsy outfits whose only trading desires are to exchange their present state of health for better or, perhaps to give the kids a good time as well as to enjoy themselves.

I have even seen a couple of camps (there must have been telephone men in disguise in them) with a jointed pole run up and hooked over a pair of wires on my lines, just for emergency. The telephone was on the car and a pair of wires of green drop cord ran up to the contacts on the poles.

We did not get any calls at the main office, but the fact remained that in case of sickness in the night or other troubles they would have had recourse to the telephone. Think of it! Electric lights and a telephone at a wayside camp! I wonder what a true old-time gypsy would think of such magic.

It seems that no matter where we go or what we do nowadays, we cannot get away from the sound of the telephone bell—in war and in peace; at the prize ringside and in the church; the wedding and the funeral; the birth and the death. We are greeted with its tinkle when we arrive in the world, as the nurse or father hastens to spread the good news, and on our deaf ears it falls as the undertaker is requested to step 'round and take charge of the remains.

If the telephone fills such an important place in the world, does it not follow that we, as telephone men, are of considerable importance as well? We are the doctors who are responsible for the health of the telephone service, so to speak. We must be responsible for its upkeep and general welfare, in no common manner, as its importance grows in the world. The more we teach the world to rely on the telephone to transact the business of every day, the more we, unwittingly, perhaps, pledge ourselves to keep that service always fit and available for the public to depend upon and use. We owe it to a public that trusts us the same as a vendor of public foods owes it to those who depend upon him for their daily food to supply it in good shape and in sufficient quantities to meet their needs.

We acknowledge we owe all this and perhaps more, but do we owe it to the *unpaying* public to give them the use of our lines to order groceries over from a neighboring telephone? Do we owe any subscriber the right to let his bill run for months and months? Do we owe a community common battery service at magneto prices?

Do we have to stand, hat in hand, at the door of any banker, merchant or capitalist because we are telephone men, and they are what they are? If there is caste in the business world, do we occupy a higher or a lower caste or are we the equals with the aforenamed in importance to the community?

It seems that there should be a feeling that as district managers, plant men, managers, linemen, trouble shooters and all along the line that we are equal to the best in importance of occupation.

In emerging from the past experiences, wherein we demonstrated that the telephone was needed in the community and was a valuable fixture from then henceforth, we have earned a crown which we seem to be at a loss how to wear.

We have not demanded the perquisites which go to those who rightfully wear crowns. We have filled the bill but are not as yet drawing the salary commensurate with the job. The war is bringing the truth of that out every day, a little faster than it would have leaked out otherwise, perhaps.

People are still camping out and hooking onto our lines for the purpose of getting and sending out information concerning their own affairs and we are either none the wiser or else do not make them pay what they should.

APHORISM: You are what you make people believe you are—but first make yourself believe.

Safeguarding Industry by Minimizing the Fire Hazard.

The National Board of Fire Underwriters has prepared for the Council of National Defense and is mailing to some

A Patriotic Duty of Every American is to
PREVENT FIRE
America at war needs every ounce of her energy and resources. It is criminal to cause hazards; it is unpatriotic to neglect them. Here are some of the ways in which you can help:
1. Learn the factory safety rules and observe them.
2. If you discover a fire, give the alarm promptly. Do you know how to do this? Ask to be shown.
3. Don't smoke where it is not permitted.
4. Never drop a lighted match, cigar or cigarette; be sure that it has no spark left before throwing it away.
5. Report suspicious strangers seen about the plant.
6. If you notice any unusual smoke, the overheating of any machine, or any other accident, notify the foreman at once.
7. Carry your precautions into your own home; keep your house and yard free from rubbish, and help others to do the same.
Where would your job be if this plant should burn?
Help Uncle Sam
BE CAREFUL
Approved by the National Board of Fire Underwriters
Endorsed by the Council of National Defense

Rules for Prevention of Fire Prepared for Council of National Defense.

The Most Efficient Manufactured

"Why don't you build automatic?" asked a telephone man of a Kellogg representative recently. We believe that this question and its answer deserves the widest publicity.

The Kellogg Company will build automatic when the telephone using public wish it, and when the telephone operating manager and his organization know that it is best.

Looking back many years over the advertising pages of telephone trade journals we see continued and repeated statements of the successes of automatic installations. We note long lists of cities, many of them large cities, having automatic plants and which plants 'have proved and are proving most successful.' Where are they today?

The few plants in operation in this country must be judged as to their success, which, of course, does or should mean their financial success, by the many considerations which entered into the installation of the equipment, its management, its present plant equipment, the relative strength of the company in its own territory, its cost to date, its present condition and worth, and the future possible growth.

A mere handful, and the list can be counted on the fingers, of the present day automatic plants in the United States is, better than anything else, indicative of the fact that the telephone speaking public and the exchange managing men responsible for this equipment to the telephone using public, do not wish this type of apparatus in the interconnection of telephone conversation.

The Kellogg Company is ready to furnish an automatic system and a system, like every Kellogg piece of apparatus distributed in the past, that is unequalled by any other in the service that it will give, when the telephone operator and the public wish it.

The great initial expense of installation, the great expense of upkeep, and these are facts easily obtained, the disadvantages of a service wherein, instead of three or four people representing the human element in the switching, there are as many different kinds and types as there are people in the town, are evident handicaps to every thinking man.

Please tell the Advertiser you saw his Advertisement in TELEPHONY.

System is the Type by Kellogg

For the public in general, the automatic means work for them to do which they dislike, and, as a heterogeneous mass that they are in this country, they cannot do well.

The human element as represented in the few operators necessary in the switching of the modern Kellogg Instantaneous Recall switchboard offers practical commercial advantages not approached by any other system as yet devised.

At the present day, the claims of competitors attempt to show that the manual system is disastrously affected in these troublous and high cost of living times. The help question is continuously dwelt upon. It has been harped on for years. In its every aspect this alleged difficulty in the hiring of help has no special claims in the operating of the telephone plant. Men who are drafted go, those who are not drafted are proportionately in greater demand, and they go where that demand is keenest—namely—where they get the most money. The high priced and difficult to obtain and irreplaceable switch man in the automatic plant is a far keener problem than the possibility of being unable to obtain the few operators necessary to operate a modern Kellogg switchboard.

To the average Kellogg exchange manager in the average sized town, the problem of securing help is a minor one, and not to be compared to the great difficulty in securing and keeping competent switchmen and repairmen in any automatic plant, from which there is but one source of supply, let alone the responsibility of keeping that plant in operating condition in normal times.

The Kellogg Company has a significant array of facts down in black and white to back up these statements. Find out about these facts. With the Kellogg Instantaneous Recall switchboard

USE IS THE TEST.

KELLOGG SWITCHBOARD & SUPPLY COMPANY

CHICAGO, ILLINOIS

Branch Offices: Kansas City, Mo., San Francisco, Cal.

Columbus, Ohio, 409 Huntington Bank Bldg.

DISTRIBUTING HOUSES: Canada West Electric, Ltd., Regina, Sask., Can.; The McGraw Co., Sioux City, Iowa; The McGraw Co., Omaha, Neb.; Pacific States Electric Co., Los Angeles, Cal., Oakland, Cal., Portland, Ore., Seattle, Wash.; Northwestern Electric Equipment Co., St. Paul, Minn.; Tower-Binford Elec. & Mfg. Co., Richmond, Va.

Please tell the Advertiser you saw his Advertisement in TELEPHONY.

66,000 of the leading manufacturers of the United States a booklet containing directions for the prevention of fire, under the title of "Safeguarding Industry," together with a showcard of fire prevention rules for employes, which is reproduced in the accompanying illustration.

Following is a statement made by President Wilson to the National Board of Fire Underwriters relative to the safeguarding of industry, which is reproduced on the cover of the booklet:

"Preventable fire is more than a private misfortune. It is a public dereliction. At a time like this of emergency and of manifest necessity for the conservation of national resources, it is more than ever a matter of deep and pressing consequence that every means should be taken to prevent this evil."

The purpose of these booklets and showcards is to prevent fires in industrial plants which are working under the abnormal conditions of wartime emergencies. Telephone companies will do well to take cognizance of these suggestions for minimizing the fire hazard in their repair shops and storerooms. Any company desiring copies of these booklets and folders can obtain them from the National Board of Fire Underwriters, New York City, upon request.

Co-Operative Movement Among Engineers of All Classes.

A most significant movement of recent times in the engineering world has been the development of co-operative action among engineers of all classes, and this tendency will, it is believed, serve to offset the evils of specialization. It is the growing recognition of the fact that all branches of engineering are interdependent. Electrical engineers are well aware how much they need the assistance of other branches of engineering for the successful fulfillment of our purpose.

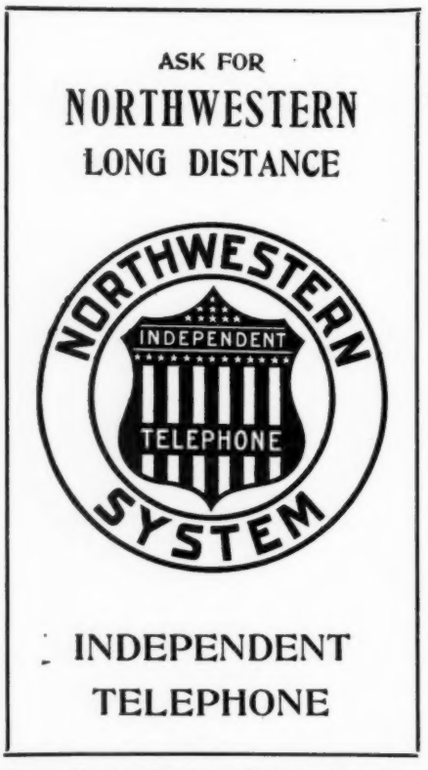
This co-operative movement has quite recently been given tangible expression in the formation of the Engineering Council. Under this organization as a beginning the civil, mechanical, mining and electrical societies, together with the United Engineering Society, are tied together for co-operative action through a joint body of 24 representatives. This body will meet at frequent intervals and will deliberate on matters of general interest to engineers. It is an encouraging beginning toward universal co-operation among engineers in all branches of work.

This Engineering Council consists of an engineering body representing some 30,000 engineers of sufficient scope and standing to create an engineering public opinion. Its influence is likely to be far-reaching in building up the prestige of engineers in both technical and civic affairs.

In addition to the standing committees the council has created a war inventions committee comprising H. W. Buck, A. M. Greene, Jr., and E. B. Kirkby, to co-operate with the naval advisory board and other departments at Washington, if desired, in the promulgation to engineers of war problems now before the government and for which there are opportunities for solution by means of inventions. It also created a committee comprising George J. Foran, E. B. Sturgis, A. S. McAllister and A. D. Flinn, which is to collect and compile such information regarding engineers of the country as will enable the committee to co-operate with the different departments of the federal government on request and to assist in supplying the government's need for engineering services.

Meeting Long Distance Competition in Pacific Northwest.

In the accompanying illustration is shown the front of a folder which, President F. H. Crosby of the Northwestern Long Distance Telephone Co. states, has been very helpful to his company in securing business in the face of sharp competition with the Bell company.



Folder Used to Get Long-Distance Business.

"Do you always travel on the same road" is the caption which appears in red letters on the back of the folder. The reader is then told how long distance telephone competition is reasonably comparable to railroad competition. A brief outline is given of the history of the Northwestern Long Distance Telephone Co., which is operating under the federal decree in the anti-trust suit brought against the Bell company in the Pacific Northwest. Under this decree the subscriber is given the choice of the long distance service he desires to use.

The inside of the booklet contains a topographical map, 9 by 22 inches, showing the extent of the company's long distance system and the various cities and towns which can be reached over its lines. The Northwestern company now connects with all the local exchanges in the principal cities and towns in northwestern Oregon and western Washington, or a total of over 150 exchanges. A complete list is given of the exchanges reached by the company as well as general information for placing calls over the Independent long distance lines.

What the Troublemen Found Regarding Service Complaints.

A certain "party" listed in the Louisville, Ky., directory of the Cumberland Telephone & Telegraph Co. has been for the last several weeks a more or less frequent kicker about service. The connections were not satisfactory on occasions; sometimes service was interrupted and, though the subscriber was able to make out-calls, there would be no results when exchange tried to ring the bells.

The problem was solved recently when the troubleman, after a number of calls, noticed two Airedale pups playing in the backyard. At the moment they were gnawing the handles off a wheelbarrow. The propensity of an Airedale pup to chaw things is pretty well known. Working along this line, the troubleman discovered that they had playfully chewed on the cord connecting the desk telephone, with the results related.

The cord is now looped high on the wall and the chances are that this particular party will obtain reasonably good service.

Action of Lightning When It Discharges to Earth.

C. C. Deering, secretary of the Iowa Independent Telephone Association, had rather a shock recently when he read an item in Boone News Republican. It seems a woman was badly shocked by lightning which struck a tree beneath which she was standing. There was a metal eaves trough leaning against the tree.

After relating the circumstances the newspaper made this comment: "It is thought the metal trough saved her life as she was carrying a pair of scissors and a needle in one hand, both of which would probably have attracted the electricity if the trough had not been there."

Mr. Deering is of the opinion that TELEPHONY's readers should be advised not to carry scissors and needles unless they are going to walk near metal troughs. After reading the newspaper item he is inclined to think it a pretty dangerous thing to carry even a coil of wire. Possibly telephone companies could be persuaded to place metal troughs against every one of their poles.

Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision Over Telephone Companies—Decisions of Courts in Matters of Interest to Public Utilities and Actions of City Councils Relative to Franchises, Rates and Service

Platte Valley (Neb.) Company to Make Big Bond Issue.

In order to secure capital for extensions and to supply the demand for telephone service in its section, the Platte Valley Telephone Co. has asked the Nebraska State Railway Commission for authority to issue $50,000 worth of bonds. Its attorney suggests that if the bonds can be issued at once it will be possible to sell them at par before the liberty bond second issue is placed on the market. A bank at Malmo has agreed to take them at 6 per cent. It is now a heavy holder of these bonds.

The application sets up that the $50,000 bond issue authorized a year ago has all been expended in paying off short time notes and providing for additions and betterments. Since August 31, 1916, the farm stations of the company have increased from 560 to 634, the city stations from 1,313 to 1,750 and the number of switching stations in proportion, a total of 541 new stations in a year. The company now has orders for 202 stations that it has not installed. It has material and equipment costing $15,000 ordered and the cost of installation will reach $6,000. The company desires to order additional equipment and material amounting to $15,000. The sum of $50,000 is necessary to care for immediate requirements.

The Platte Valley operates exchanges in the cities of Gering and Scottsbluff and the towns of Bayard, Melbeta, Mitchell, Minatare and Morill, in Nebraska, and Torrington and Guernsey, Wyoming. This is the best irrigated section of the state, being under the great government Pathfinder dam, and is growing very rapidly, two new giant beet sugar factories aiding materially. The report of earnings and expenses of the company for the year ending June 30, 1917, just filed with the state commission, is as follows:

Earnings:	
From toll service	$14,753
From subscribers' service	43,912
Switching stations	5,088
Sundry sales	269
Miscellaneous earnings	1,626
Lease of toll line	72
Total	$65,720
Operating expenses:	
Maintenance and depreciation	$15,017
Operative	21,802
General	10,542
Total	$47,361

Of the net income of $18,359, the company paid out for interest, $2,599; taxes, $1,065, dividends, $6,198, uncollected revenues, $61; while $8,436 was credited to the surplus account.

Exchanges are as follows: Bayard, 278; Gering, 267; Guernsey, Wyo., 59; Melbeta, 57; Minatare, 176; Mitchell, 266; Morill, 154; Scottsbluff, 990; Torrington, Wyo., 167. Total 2,414.

Petition for Flat Toll Rate to Fremont, Nebraska.

The Farmers' Telephone Co., of Dodge county, after being twice denied the right to make a ten-cent toll rate to subscribers only on all exchanges to Fremont, the county seat, where its wire enters the switchboard of the Nebraska Telephone Co., has now applied for permission to make a flat rate of 10 cents for everybody.

The company operates a group of small town exchanges that form a semi-circle around Fremont. The original exchange is located at Webster, an interior town without railroad facilities, and each additional exchange was so built that its wires run through this exchange. Therefore, in order to talk to Fremont all toll calls have to go through this exchange. The company has a free interchange of service on all exchanges, and for a time permitted all subscribers to use these lines free to Fremont, and where the call was beyond the Nebraska company's Fremont exchange, to begin computing the charge at the latter exchange. This resulted in the overloading of the lines and at the suggestion of the commission that good business required a toll charge from the point of origin of a call, it put in a system of charges, running from 10 to 25 cents.

Immediately the management began hearing from the farmer subscribers. It sought to appease them by trying to get a special rate for them, but the commission said that this was discrimination against the non-subscriber. After that the patrons of the exchanges nearest Fremont, because they could get a direct line from their town to Fremont over the Nebreska lines, gave the latter their business. In an effort to prevent this, the management now asks a flat rate of 10 cents regardless of distance the message has to travel.

Permission Asked to Abandon Exchange Operated at Loss.

The Wyoming & Nebraska Telephone Co. has a fight on its hands as a result of its application to the Nebraska State Railway Commission for permission to discontine its exchange at Whitney and to give it party line service out of Crawford. The company has made a showing that it has but four subscribers paying $2 a month, one paying $1.75 and nine paying $1.50, making total receipts of $23.25 a month, and leaving a loss of from $35 to $40 a month. It also says that its operator has moved away.

W. C. Howard, president of the Ash Creek Telephone Co., for which the other does switching, has raised the point that a company operating a group of exchanges in a section, cannot base an application for abandonment of one exchange on the fact that it does not pay, when the company as a whole is making money. He says that 13 or 14 years ago farmers' companies were operating in the county, three of them centering at Whitney, that without invitation the Wyoming & Nebraska came into the town, built an exchange and practically "kicked the farmers' switchboard into the street," and that having established an exchange there he must stand by the obligation assumed whether it pays or not.

He also says the community cannot be properly served from Crawford. Rev. C. E. Calame, who recently objected because the exchange was not kept open longer hours on Sunday, has also filed a protest, saying that the company has a considerable toll revenue not mentioned in its showing and that the people are much opposed to the abandonment of the exchange.

Exacts Payment for Answering Telephone in Railway Depot.

The Cambridge Telephone Co. lost out in its efforts before the Nebraska State Railway Commission to compel the Burlington Railroad Co. to buy a $20 share of stock before it could be given telephone service in its depot in that town. The telephone company claimed to be a mutual, but its report showed that it gave service to 115 stations and had only 30 stockholders, and the commission held this took it out of the mutual class.

The curious fact was brought out in the hearing that for years the company has had a telephone in its Cambridge depot, for which it paid $12 a year, but that it charged back and collected from the company $12 a year for answering the telephone and telling how the trains were. The telephone company asked the commission to order the railroad company to pay it for service back to 1909, when the legislature passed a law requiring railroad companies to maintain tele-

phones in depots for the convenience of patrons.

The commission ordered that hereafter the Burlington pay the regular rate and charge nothing back against the telephone company, but refused to act as collector for back dues that the telephone company could at any time have insisted be paid along with other accounts due it for regular service.

Cannot Compel Small Company to Furnish 24-Hour Service.

A telephone company operating as small an exchange as 100 subscriber stations cannot be required to give an all-night service merely to guard a popular physician from loss through the inability of his patients to reach him any time they wish to do so. This is the decision of the Nebraska State Railway Commission in the complaint of Dr. G. O. Dunseth against the Miller Telephone Co.

The company employs two operators and gives service from 6 a. m. until 9 p. m., with shorter hours on Sunday. A night emergency bell is located in the operators' sleeping quarters close by. The doctor said he had lost a lot of business because calls did not get through, and asked the commission how he could collect damages. The commission held that the company was giving standard service for towns and exchanges of its size, and dismissed the complaint. The company's reply included a statement that the doctor was a newcomer and "wanted to run his own, the town's business and the telephone company's business."

May Increase Rates After Improving Service in Harrah, Okla.

The Oklahoma Corporation Commission recently authorized the Harrah Telephone Co. of Harrah, Okla., to increase its rates contingent upon the improvement of its service, as follows:

From $1.50 to $2.25 for business telephones; from $1 to $1.25 for residence and rural lines.

A hearing was held before the commission recently upon the complaint of citizens of Harrah that the service furnished was unsatisfactory. The company showed that its revenues were not sufficient to better the service and offered to make improvements if an increase in rates were allowed.

Nebraska Independent Company Seeks Toll Connections.

The Skeedee Telephone Co., of St. Edward, Neb., has asked the state railway commission to order the Nebraska Telephone Co., which also operates an exchange in that town, to establish toll connections between the two exchanges. At the last session of the legislature, Representative James Auten of that county sought to have a law passed requiring such connection in any town where there are exchanges maintained by different companies. The bill was killed in the house corporations committee. Mr. Auten now asks the commission to exercise this power under the general provisions of the law which gives the commission jurisdiction over telephone companies and their service.

The Nebraska company filed an immediate answer declaring that it would resist any such order, and would take the matter into the courts. If the complaint is pushed, it will be joined with the suit which is threatened wherein the Glenwood company is asking that the Lincoln company be forced to connect with its rival exchange at Pauline. The Nebraska company sets up that it was in St. Edward first and that it stands ready and willing to furnish service to all who desire it. It asserts that the sole object of the complainant is to destroy the business of a competitor, and that there is no legal justification for requiring it to furnish all of its toll facilities to its own detriment and destruction.

Right of City to Compel Relocation of Poles.

Where an electric lighting company under a franchise is maintaining its poles and instrumentalities in the streets of a city, the city cannot exercise its governmental power to compel the removal and relocation of such poles and instrumentalities in order that it may, in its proprietary or quasi private capacity, install a municipal lighting system, since, when acting within the domain of its proprietary capacity, it may not draw power to itself through an assumption of public and governmental functions.

While an electric lighting company, maintaining its poles and instrumentalities in the streets of a city under a franchise, acquires no right under such franchise to maintain them at any particular place on the public streets, it acquires a right of priority, preventing the city from compelling the removal or relocation of such instrumentalities in order that a competitor of later origin may take their place.—Los Angeles Gas & Electric Co. vs. City of Los Angeles—United States District Court, California; 241 Federal, 912.

Compensation for Use of City Streets of Iowa.

Under Code 1873 of Iowa, § 1324, as amended by Acts 19th Gen. Assem. c. 104, authorizing the construction of a telegraph or telephone line along public highways or across rivers or over any lands belonging to the state or to any private individual, and the erection of necessary fixtures, etc., and that such fixtures must not be so constructed as to incommode the public, and shall not be set up on private grounds without paying damages, no compensation need be paid to a city for the use of its streets for such fixtures, although the statute did not bargain away the police power of the state or a city or the power of the city under legislative authority to impose a license fee or tax.—City of Des Moines vs. Iowa Telephone Co.; Supreme Court of Iowa; 162 Northwestern, 323.

Company Must Maintain Rates Under License.

Where a city, without complying with ¶ 164 of the constitution of Kentucky, by a public sale of the franchise to the highest and best bidder, after due advertisement, granted to a telephone company the privilege of installing and operating a telephone exchange, such privilege was not a valid franchise, but was a mere license revocable after reasonable notice. Where a telephone company is enjoying the privilege of operating a telephone exchange in a city, under a license which has not been revoked and which obligates it to furnish telephone service to citizens of the city at a rate not to exceed $1 per month for each telephone, it will be required to maintain this rate so fixed so long as it continues to furnish such service.—Bastin Telephone Co. vs. Mount; Court of Appeals of Kentucky; 195 Southwestern, 112.

Rules Issued Relating to Wire Construction in Kansas.

The Kansas Public Utilities Commission has issued its order in the matter of the investigation for the establishment of rules and regulations governing the stringing of wires along and across highways and railroad crossings. The rules relating to wire construction contained in the order cover in a general way the National Electrical Safety Code pertaining to overhead and underground wire construction recently issued by the Bureau of Standards at Washington, D. C.

Injury to Submarine Cables.

A dredge at work in the turning basin at Mobile was held not liable for fouling or injuring telegraph and telephone cables, which some two years before had been laid across on the bottom of the river, 300 or 400 feet above where the dredge was at work, and which, so far as shown, had not been moved.—Home Telephone Co. vs. Dredge No. 4; United States District Court, Alabama; 241 Federal, 201.

Injury to Lineman.

Risks which ought not to exist, and would not but for the master's negligence, are not assumed by a lineman, unless he knows and comprehends them, or they are so obvious that the law will charge him with knowledge and comprehension.

Instructions to linemen to make a personal inspection and examination of con-

ditions of poles is not enough to charge a lineman with knowledge of what could be learned by digging to the bottom of a pole.

In an action for injury to a lineman by the falling, on the breaking of a wire, of a leaning pole set shallow, on which he was at work straightening it, it was held to make a question for jury as to freedom from contributory negligence, the question of safety depending on the combined effect of a number of related conditions.—Garfield vs. Passumpsic Telephone Co.; Supreme Court of Vermont; 100 Atlantic, 762.

Lien Against Telephone Property in Wisconsin.

Where a Minnesota telephone company has its system and switchboard in the state and, though without authority, extended a line into Wisconsin, useless except as an adjunct to the Minnesota system, plaintiff, performing labor upon the lines in both states, was entitled to enforce a lien for the full amount against the main plant in Minnesota.

Where the plaintiff performed labor for a telephone company in constructing its system in Minnesota and a branch line in Wisconsin, the court held the lien was valid against whatever interest the company had in the telephone system.—Brown vs. Marine Home Telephone Co., Supreme Court of Minnesota; 162 Northwestern, 884.

Right to Place Telephone Poles on Public Road.

Where the roadway was smoothed and graveled to a uniform width of 22 feet, an instruction that defendant had a right to maintain its pole at a point along the margin, provided the pole was not at a place where it interfered with the usual customary use of the road by the public, although not universally true, was not erroneous.

Code 1907 of Alabama, § 5817, giving telephone companies the right to construct their lines along the margin of the road, does not give the right to intrude poles into that part of road set apart and dedicated to the use of the traveling public.—Gilbert vs. Southern Bell Telegraph & Telephone Co.; Supreme Court of Alabama; 75 Southern, 315.

Right to Maintain Poles on a Public Highway.

The right of a telephone and telegraph company under its franchise to maintain poles in a highway is qualified by the paramount right of the county authorities to keep the highway in reasonable condition for ordinary use by the public, and the damage which necessarily follows to such licensee from an improvement of the highway without negligence by the county authorities would not be a taking or damaging of property within the meaning of Washington const. art. 1, § 16, which provides that no private property shall be taken or damaged for public or private use without just compensation having been made.—Granger Telephone & Telegraph Co. vs. Sloane Bros., Supreme Court of Washington; 165 Pacific, 102.

Cannot Compel Offering Telephone Franchise for Sale.

As the constitution of Kentucky, §§ 163, 164, the only law applicable, merely prescribes the conditions under which a franchise may be obtained, the granting thereof is a matter of discretion, and mandamus will not lie to compel the council of an incorporated city to offer for sale a franchise to operate a telephone system therein.—Bastin Telephone Co. vs. Davidson, mayor; Court of Appeals of Kentucky; 195 Southwestern, 148.

Tax on Telephone Poles.

The city council of Arkadelphia, Ark., has passed an ordinance imposing a tax of 25 cents per year on every telephone and telegraph pole in the city.

Summary of State Commission Hearings and Rulings.

CALIFORNIA.

August 10: The commission has authorized the Siskiyou Telephone Co. of Etna, Siskiyou county, to acquire under special use permit the use of certain telephones owned by the federal forest service and to lease to the forest service certain lines owned by the company.

MINNESOTA.

August 15: The commission authorized the Nevis Telephone Co. of Nevis, Minn., to put into effect September 1 the following increased schedule of rates: Business, $2 per month; residence, $1 per month, and connecting rural stations, $3 per year.

August 18: The commission dismissed the application of A. Buchanan, et al., for physical connection between the toll lines of the Northwestern Telephone Exchange Co. and the exchange of the Four Corners Telephone Co., at Oakland, Minn., the latter company having entered into an agreement with the Interstate Telegraph & Telephone Co. whereby the Interstate will take over the Four Corners company. It will be necessary for a new petition to be filed against the proper parties before the commission has jurisdiction to proceed with the case.

August 20: Hearing on the application of the Northwestern Telephone Exchange Co. for permission to purchase certain telephone properties of the Dakota Central Telephone Co. in Minnesota.

August 23: Hearings at LeRoy, Minn., on the application of the LeRoy Telephone Co. for permission to increase its local and rural rates at LeRoy, Minn.

August 23: Hearing at Adams, Minn., on the application of the LeRoy Telephone Co. for permission to increase its local and rural rates at Adams, Minn.

August 29: Hearing in the matter of the application of the Blue Earth Valley Telephone Co. for permission to increase its exchange rates at Blue Earth and Winnebago.

August 30: Hearing in the matter of the application of the Blue Earth Valley Telephone Co. for permission to increase its exchange rates at Wells, Minn.

NEBRASKA.

August 13: Application on behalf of Skeedee Telephone Co. for order upon Nebraska Telephone Co. for toll line connection between competing exchanges at St. Edward; answer of company resisting order and challenging power of commission; hearing ordered.

August 13: Protest filed by C. C. Howard, president of Ash Creek Telephone Co. against abandonment of exchange of Wyoming & Nebraska Telephone Co. at Whitney; hearing ordered.

August 13: In re complaint of Dr. G. O. Dunseth against Miller Telephone Co., dismissed as without merit.

August 13: Application of Hay Springs Telephone Co. for validation of 25-cent night emergency call rate; granted.

August 14: Application of Cambridge Telephone Co. for order requiring Burlington Railroad to purchase share of stock in order to secure service in Cambridge depot denied; evidence examined, held to show that company is not strictly a mutual but sells service generally. Companies ordered to cease practice of reciprocal rate for service.

August 15: Application of Platte Valley Telephone Co. for authority to issue $50,000 worth of 6 per cent. bonds to pay for extensions ordered and contemplated.

August 16: Application of Central Telephone Co., of Greeley, and Scotia Independent Telephone Co. for cancellation of five-cent charge between exchanges; granted. The rate was asked for four years ago on the plea that the free use granted thereof to subscribers overloaded the wires. Owing to protests of subscribers the rate was never charged. The commission desired to correct records to correspond with practice, but notified companies that in its opinion the companies had rendered themselves liable for undercharging a legally established rate.

August 16: Complaint of V. R. Barton, hotel keeper at Niobrara, that Nebraska Telephone Co. supplies rival hotel with booth, but will not install one in his hostelry; filed.

August 16: Application of Farmers' Telephone Co. for authority to make flat toll rate of 10 cents from all exchanges to Fremont; filed.

August 16: Application of Nebraska Telephone Co. to change rate from Amelia to Morrill from $2.45 to $1.75.

August 16: Application of Carroll Telephone Co. to increase exchange rates 25 cents a month and switching rates 10 cents; filed. The company operates a small exchange of 100 telephones in Northeastern Nebraska, and switches 250 others. The application asks for increase of individual business lines from $1.50 to $1.75, individual residence from $1 to $1.25; rural lines, from $1 to $1.25; with $1 for extension business telephones and a reduction of 25 cents from the tariff where a man has a business and a residence telephone on the same line. James E. Hancock is sole owner, also president, general manager and lineman.

September 17: Hearing on application of Dawson-Nemaha Telephone Co., of Dawson, Neb., for permission to publish new tariff increasing business and residence rates.

OKLAHOMA.

July 31: Harrah (Okla.) Telephone Co. authorized to increase business rate from $1.50 to $2.25 and its rate for residence and rural telephones from $1 to $1.25, contingent upon the improvement of its service.

Fundamental Principles of the Telephone Business

A Reading Course Designed to Present Logically the Principles Which Underlie Successful Organization and Operation of Telephone Properties—Prepared Under the General Supervision of Stanley R. Edwards—This Section, "Part VI, The Valuation of Telephone Properties," Written by Chas. W. McKay

Quiz Questions on the Preceding Installment.

256. Prepare an estimate of the cost of securing various types of rights of way. Why are rural costs lower than those in the city?

257. Outline several points relative to unit costs which deserve most careful consideration.

258. What subject is vitally important to owners and operators of telephone properties both from the rate-making standpoint and the standpoint of plant operation?

259. Give a definition of depreciation.

260. Into what four general classifications may the subject of depreciation be divisible? State an additional classification.

261. What class of depreciation does not play as important a part in the depreciation of telephone properties as it does in the depreciation of industrial plants? Discuss its application to telephone plants.

262. Upon what is depreciation due to age and physical decay largely dependent?

263. Define inadequacy depreciation. Present an illustration.

CHAPTER XVIII. Depreciation (Continued).

264. *Obsolescence Depreciation.*—"Obsolescence means the depreciation of a property through the development of something newer or either more economical or more of a fad. Like inadequacy, it may necessitate the abandonment of property long before it is worn out, and in many cases arises largely from the demands of the public." This definition is from "Valuation of Public Utility Properties," by Henry Floy.

While it is true that obsolescence depreciation plays a part in the operation of telephone properties, it is not nearly as important from the standpoint of either the appraisal engineer or the operating executive as are age depreciation and inadequacy depreciation. The telephone art has developed to a point where the substitution of a radically different design in order to effect an economy or to meet a popular demand, is somewhat of a rarity.

Perhaps one of the best examples of obsolescence depreciation to be had in the telephone field is that of coin collectors used in connection with pay stations. During the last few years the larger companies have retired a quantity of various types of instruments in favor of the prepayment type—the type where one deposits the coin before he is able to signal the operator. This is not necessarily due to the fact that the other types were worn out or inadequate, but because the prepayment type had made them, from the manager's standpoint, uneconomical and obsolete.

265. *Extraordinary Depreciation.*—Extraordinary depreciation, as the term suggests, is that resulting from extraordinary causes. For instance, a recent hurricane in Mattoon, Ill., wiped out practically the entire telephone plant. Depreciation—from a value representing a plant in active service to a zero (or perhaps even a negative value—occurred in the space of a few minutes.

This was entirely due to a cause far removed from the ordinary and which could not be accounted for under any of the causes of depreciation we have so far considered.

It is customary, therefore, to make some provision for extraordinary depreciation. Perhaps one of the most frequent causes of extraordinary depreciation is the so-called sleet storm. Wholesale fire destruction, such as resulted from the San Francisco or Baltimore fires, is another cause of extraordinary depreciation.

266. *Depreciation As a Factor in Appraisal Work.*—As we have already seen, depreciation plays a most important part in appraisal work—in the determination of the so-called present or depreciated value. In determining the present condition of a plant we consider the component items in detail, estimating first the probable life they would have if subjected only to physical depreciation and, second, how this probable life will be affected by inadequacy and obsolescence.

Probably the relation of depreciation to appraisal work can be more clearly shown by a simple illustration, very similar to one given in a foregoing chapter.

Assume the reproduction, in service, cost of a piece of aerial cable at $1,000. Assume further, that from the best data available the appraisal engineer finds that aerial cable of the size and type of the one under consideration has an average life—taking into consideration physical decay, inadequacy and obsolescence and all of the other depreciation factors—of 10 years. Suppose that after deducting the probable cost of removal, he estimates that the aerial cable in question will have a salvage value at the end of its 10-year useful life, of 30 per cent. of its reproduction cost—in this case $300.

The wearing value—that portion of the reproduction cost which will entirely disappear during the 10-year life of the cable—will then be $1,000 less $300, or $700. One-tenth of this amount or $70 will disappear each year that the cable is maintained in service. If the cable is five years old at the date of appraisal, then the accrued depreciation at that time will be 5 times $70 or $350, and the present value will be $1,000 less $350 or $650.

267. *Annual Rate of Depreciation.*—It will be seen, then, that the annual rate of depreciation is dependent, first, upon the life of the plant in years and, second, upon the salvage value at the end of its useful life. The whole question of the annual rate of depreciation of telephone properties is one that has received much of the time and thought of some of the foremost engineers in the country. The term "rate of depreciation" as here used, means the annual rate at which the lessenings of wearing value takes place. In the illustration presented in the foregoing paragraph, $70 is the annual rate of depreciation.

268. *Depreciation and Depreciation Reserve.*—Before attempting to discuss the practical side of depreciation as applied to telephone properties, it may be well to consider the relation between depreciation and depreciation reserve. In order to clearly understand this relation, let us again consider the illustration of the aerial cable. Obviously some method must be devised to make good the $700 depreciation in value between the time the cable is installed and the time it is junked.

There are two possible ways in which this might be done. First, a fund of $70—equal to the annual lessening in value—might be set aside each year. This fund, without interest, would equal $700 at the end of the estimated useful life of the cable. The $700 fund thus built up to replace the wearing value at the end of the useful life of the cable, would be known as "depreciation reserve fund." This method of building up the fund is known as the "straight-line" method.

If on the other hand instead of setting aside $70 each year, an amount, prede-

termined from annuity tables, be set aside annually which, with interest compounded, would produce a fund of $700 at the end of 10 years, we would be producing a depreciation reserve fund by what is commonly known as the "sinking-fund" method.

269. *Relative Merits of Sinking-Fund and Straight-Line Methods of Building Up Depreciation Reserve.*—From the illustrations which have been presented, it will be apparent that if a sinking fund is accummulated under the straight-line method, an amount considerably in excess of $700 would be available at the end of the 10-year period. This is due to the fact that, assuming the fund is properly invested, interest would be constantly accruing on the increment set aside each year. On the other hand, if the sinking-fund method is used, a fund of exactly $700 will be available at the end of the 10-year period.

At first glance, therefore, the sinking-fund method would seem the fairer of the two. There are, however, other factors to be taken into consideration. Our hypothesis has been based upon the assumption that the aerial cable costing $1,000 now, can be reproduced for $1,000 ten years hence. There is nothing to show that this will be the case. As a matter of fact, cable costing $1,000 ten years ago will cost in the neighborhood of $2,000 or $2,500 now.

It will be seen, therefore, that the straight-line method has an advantage over the sinking-fund method in that it provides a margin for unforeseen contingencies, such as increases in material and labor costs. Again, the straight-line method has the advantage of being much simpler from the accounting standpoint. Obviously it is much easier to set aside $70 a year for ten years than to determine from annuity tables the sum which must be set aside each year to produce a fund of $700 at the end of ten years.

270. *Different Viewpoints of Depreciation and Depreciation Reserve.*—In considering the two allied subjects of depreciation and depreciation reserve, it is well to remember that they may be viewed from two entirely different standpoints—the standpoint of the engineer and the standpoint of the accountant. Prof. Earl A. Saliers, of Yale University, in the preface of his work on the "Principles of Depreciation" clearly outlines these two viewpoints as follows:

"The depreciation problem may be viewed from two standpoints—that of the accountant and that of the engineer. The engineer deals with physical conditions, studies plant deterioration, the necessity of replacement, and so on. The accountant devises the ways and means of recording in the most intelligent manner the facts in connection with the changes. The work of the two should be correlated through a common understanding of the character and extent of depreciation. The engineer having shown what the rate of depreciation is, the accountant suggests devices for recording it, for providing replacement funds, etc., and thus for the preservation of capital values."

To express Prof. Saliers' thought a little differently, it may be said that it is the function of the engineer to determine how much and at what rate a telephone plant depreciates, while it is the accountant's office to devise a method for building up a sum adequate to make good this depreciation at the end of the useful life of the plant.

271. *Confusion of Depreciation and Depreciation Reserve.*—Depreciation and depreciation reserve are constantly confused even by those supposedly well versed in appraisal matters. As a matter of convenience, it is often assumed that depreciation reserve is built up at the same rate that the plant depreciates. In other words, for convenience it may be assumed that the aerial cable plant cited in the foregoing illustration, depreciates at the rate of one-tenth of its wearing value, or $70 each year, and that a like amount ($70) is set aside each year.

We may, likewise, for convenience, assume that the wearing away of the plant takes place at a rate similar to that at which the fund for depreciation is built up under the sinking fund method. In other words, it may be assumed that the accrued depreciation at any time is exactly equal to the amount accumulated under the sinking fund method in the depreciation reserve fund.

Either of these assumptions is justifiable, but only on the ground of convenience. The depreciation of aerial cable, or any other item of plant, may not, and probably does not, occur at the same rate that the depreciation fund is built up—whether this fund is built up on the straight-line or on the sinking-fund basis.

As a matter of fact, nobody knows just how a telephone property depreciates. The aerial cable used in the illustration may wear away uniformly throughout its 10-year life, or it may depreciate slowly at first and very rapidly toward the end of the 10-year period. In the last analysis, it makes little difference how it depreciates so long as we devise a reasonable method for writing off its wearing value and for building up a fund adequate to finance its replacement.

To return to the subject of the annual rate of depreciation of telephone properties, it may be said that the straight-line method is the one most frequently used—both for appraisal purposes and for building up a depreciation reserve.

(To be continued.)

Biographical and Personal Notes

H. R. Pope, for six years manager in Franklin, Pa., for the Petroleum Telephone Co., of Oil City, Pa., has resigned from that position to enter business for himself along the line of electrical contracting business in all its details. Entering telephone service at the age of 10 as office boy, he has held all positions to that of manager.

Mr. Pope's efficiency and unfailing courtesy are reflected in the growth of the Petroleum company in Franklin, a gain of more than 700 telephones being made in the six years he has acted as manager.

Roy W. Hall, general manager of the Westfield-Kansas Telephone Co., Westfield, Ill., was a visitor at TELEPHONY's offices last week. He reports great activity in his territory.

John B. Rhodes, manager of the Ohio State Telephone Co., at Zanesville, Ohio, was born and reared on a farm in Noble county, Ohio. At the age of 17 he became interested in telegraph operating and for the next eight years was employed in the telegraph operating department of various railroads as operator, dispatcher and superintendent.

He built the first Independent telephone lines in Monroe and Muskingum counties and organized and financed a number of telephone companies. He became general manager of the Zanesville Telephone & Telegraph Co. upon its organization in 1898 and was retained by the Ohio State company in that capacity when it took over the Zanesville properties in 1914.

Mr. Rhodes has an interest in a number of other telephone properties in Ohio and is secretary-treasurer of the Union Telephone Co., of Gloucester, the Rush Creek Telephone Co., of Junction City, the Frazeysburg Telephone Co., of Frazeysburg, the New Concord Telephone Co., of New Concord. He is also secretary and general manager of the Crooksville, and treasurer and general manager of the Citizens Independent Telephone Co., of New Lexington. He is a director in all of these companies except the Ohio State. He is also a director in the Gilbert Telephone Co.

As vice-president of the third district of the Ohio State Independent Telephone Co. since its organization, Mr. Rhodes has been active in state association affairs. He is one who takes a leading position in whatever he undertakes and is

keen and alert all the time. Mr. Rhodes accomplishes things through diplomacy rather than through force.

He is a member of all Masonic bodies, an Elk, a K. of P., a Modern Woodman, the Zane Club, the Zavi Shrine Club and the Zanesville Chamber of Commerce.

John B. Rhodes.

Obituary.

Arthur Kneisel, of Chicago, national secretary of the American Association of Engineers since its organization in 1915, died last week as a result of an operation.

Mr. Kneisel is well known in the Independent telephone field and for the past two years has been engaged in consulting engineering work, specializing in patent work, telephone engineering and representations before public utility commissions.

He was educated in the public schools of Louisville, Ky., and the State University of Kentucky. After operating and installing experience with the Cumberland Telephone & Telegraph Co. and the Stromberg-Carlson Telephone Mfg. Co., Mr. Kneisel joined the engineering department of the Faller Automatic Exchange Co., in 1902. He next was manager of the Eastern New York Telephone & Telegraph Co., at Hoosick Falls, N. Y., and some time later became head of the apparatus division of the engineering laboratory of the Western Electric Co., in New York City.

Three years were spent by Mr. Kneisel in the employ of the Chicago Telephone Co., after which, in 1911, he joined the engineering staff of the North Electric Co. Later he entered the patent department of the Telephone Improvement Co. While with that company Mr. Kneisel took up the study of patent law and passed the examinations for registration as attorney in the United States Patent Office. Prior to entering the consulting field, he was for about a year assistant city telephone supervisor of Chicago. He was very active in the organization of the American Association of Engineers.

TELEPHONY joins with Mr. Kneisel's many friends in the telephone field in extending their sympathies to his family in their bereavement.

Charles M. Anderson, formerly plant engineer for the Lincoln (Neb.) Telephone & Telegraph Co., died recently at Minneapolis, where he has been holding the position of assistant foreman for the Northwestern Telephone Exchange Co. Mr. Anderson was but 36 years of age, but he has been active in telephone work for nearly 20 of these years. He came to the Lincoln company from the Bell organization, and won rapid promotion. He was afflicted with an ailment that forced him to resign. He went to Minneapolis in the hope that the Northern climate would restore him.

Wood for Telephone Cabinets

Preparing Wood to Be Used in Telephone Cabinets at the Kellogg Lumber Yard at Cassopolis, Mich.—Time and Labor-Saving Devices in the Kiln, Finishing Department and Drying Room—New Building in Process of Construction

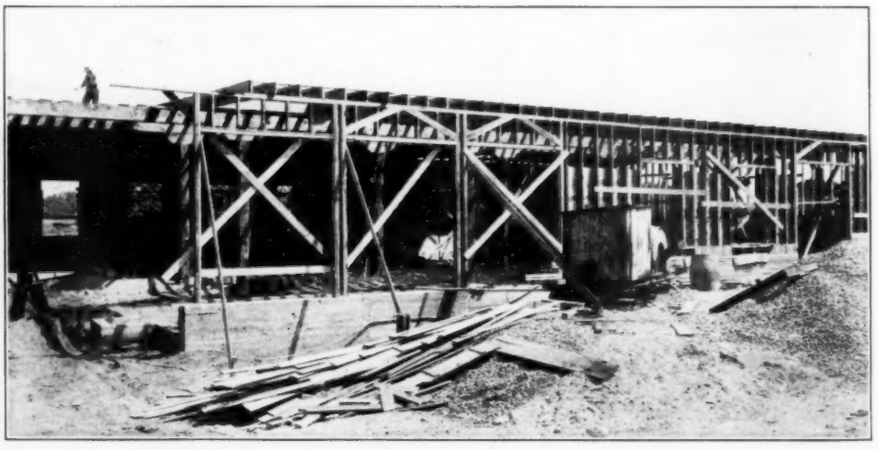
In a two-acre corner of the Kellogg eight-acre Cassopolis (Mich.) plant is located the Kellogg lumber yard. Here the rough lumber, direct from the mills, is brought in, piled and properly tagged. Tramping along the high stacks of boards that are waiting their turn to be automatically fed into the big kiln, one cannot help but ponder on their ultimate destination.

These rough and unattractive pieces of wood will go to the four quarters of the earth, to every country in the world, practically. They will adorn the walls of magnificent hallways, will be seen in drawing rooms of state officials, as well as in factory buildings, plantations, farms, mining shacks, along the right of way of railroads, on steamships, forest ranges, irrigation systems and military posts and camps, the world over.

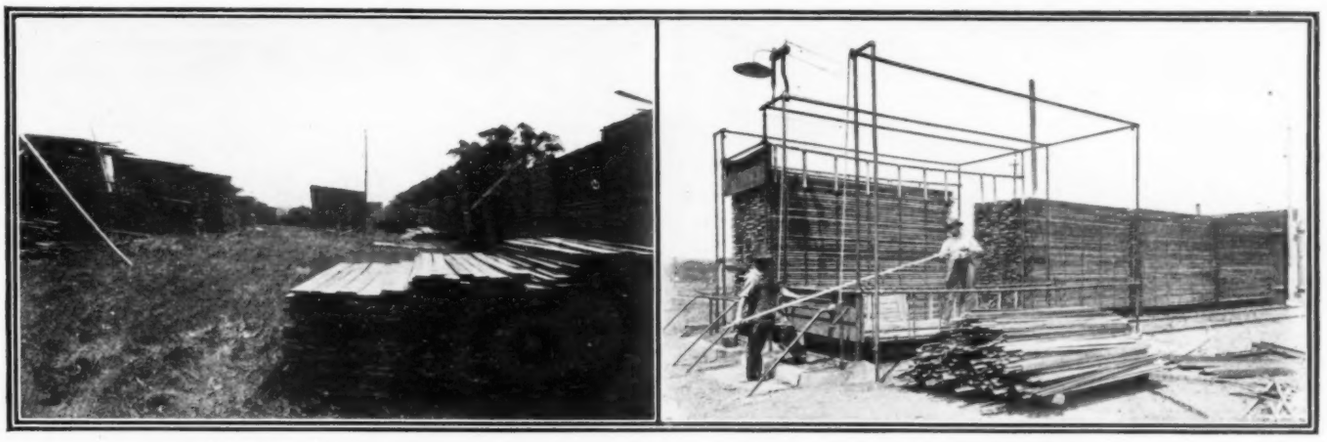
From the shade of the great tiers of oak the fragrance of newly cut wood is wafted across the field while the hum of bees in the clover suggests another busy place near by. But no beehive anywhere is busier than the Kellogg wood-working plant.

Walking towards the first of the buildings, one comes to the dry kiln and there in noticing a new improvement at the kiln, before entering the plant at all, an interesting fact is realized. Formerly the lumber was piled on the low trucks preparatory to entering the kiln and there was always difficulty and some delay in getting the boards piled straight and of the correct width and height. Also on account of the irregularity of some of the lumber and especially in the placing of the cross strips occasionally some of the wood was not dried straight.

Now by a novel loading arrangement, the cross strips are held in position by perpendicular bars of iron, which insure the lumber being accurately loaded and held perfectly straight while drying. This scheme also saves time in the loading and this efficient arrangement is the first of many soon noticed in the wood-working plant as operated today, and each of these improvements means added saving to the telephone buyer.



The Latest New Building at Cassopolis to Be Finished on "Schedule" in September.



Talking Machines in the Raw Material—Loading Lumber for Kiln—Notice the Piling Guides.

It is only by constant vigilance in adopting economy-producing, mechanical improvements in manufacturing and handling material that the price of Kellogg apparatus is prevented from soaring to an excessive height. The fact is that instead of prices being high as a result of general conditions throughout the world, they are in reality low. They would be much higher today if it were not for the efforts of the company to keep down the price by the introduction of every time and labor-saving device possible; and the piling frame at the wood kiln is the first example the visitor to Cassopolis notices.

Another notable instance of efficiency and time saving is in the finishing department, where the lacquer and varnish are now forced onto the carefully finished oak surface by means of air pressure, with an apparatus very similar to the air brush, as employed by the artist in retouching in commercial art work. This process for which very complete and up-to-date machinery and equipment was installed, insures well set coats of varnish, thoroughly and evenly applied, giving a better and more lasting finish. Each coat can now be applied in a fraction of the time necessary by the old hand method.

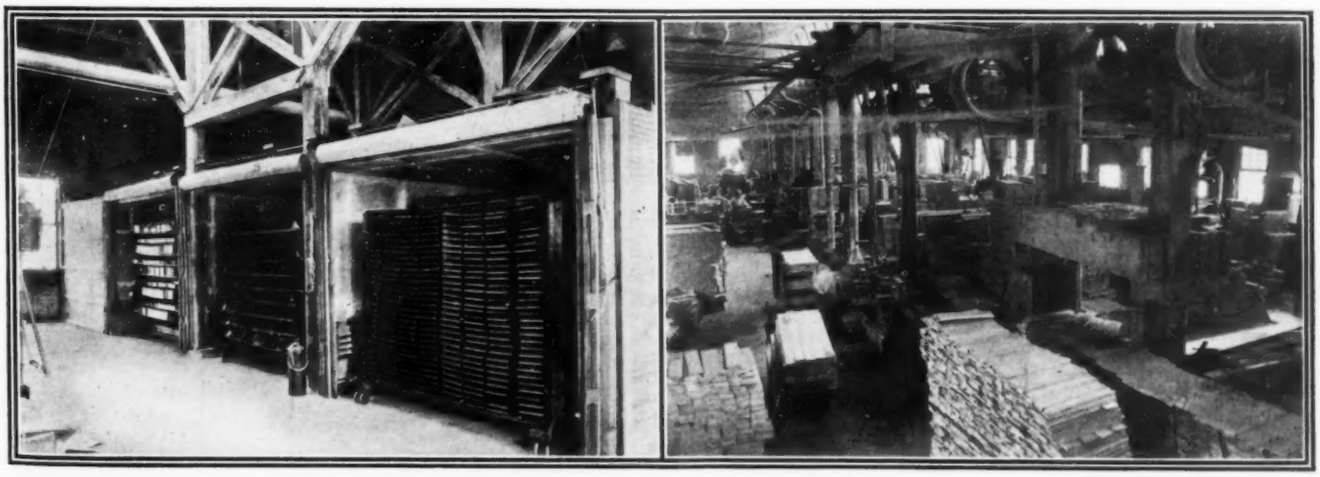
In a large plant of this kind the word "schedule" is the idol worshipped by manager and men alike, for without it no efficient production is possible. No matter how carefully planned, in a woodworking plant especially, schedules are hard to follow because of the idiosyncrasies of the material itself, different lots of wood varying in their treatments and also in the variations in drying due to changes in atmospheric conditions.

Cabinets Are Sandpapered Before Varnishing.

Here the new Kellogg drying room makes it possible to place the racks loaded with the various cabinet parts in an air tight room, close and seal the entrance and know that every one of these parts will be properly dried and in a certain definite time. In other words, they will be ready "on schedule."

Another reason for the splendid finish on all Kellogg woodwork is the care in preparing the surface before applying the first coat of varnish. High speed sandpaper belts are used with sizes and width adapted to the various cabinet surfaces. While this is not particularly new, the attention to the proper surfacing of the cabinet, which is enforced at Cassopolis, is exceptional. The old way, by hand, was a laborious and time consuming method, but the introduction of machinery for many of these processes in some plants tends towards carelessness and a hurrying through each process which invariably shows up in the finished product.

At Cassopolis each of these steps in the polishing and smoothing of the surface preparatory to the lacquering and varnishing is done by experienced men. These sandpaper belts are run over carefully built moulds which insure the corners and edges of the cabinet being properly finished, as well as the smooth sides, top and bottom.



New Kellogg Automatic Drying Rooms—Birdseye View of Woodworking Department.

Speaking of schedules, a further improvement in the handling of the lumber will soon be in operation and the new building, shown in one of the illustrations, will be finished in about a month. Tracks from the dry kiln will lead direct to this building with a turntable arrangement which will obviate some of the present handling of the raw lumber in getting it into the proper departments for beginning work.

The immense glue machine, which does the work of a score of men, is a department in itself. This long and heavy appearing apparatus takes the rough boards, puts a proper surface on them, rabbetts the sides, glues and presses them according to the wish of the operator.

Meeting of Eastern Pennsylvania Association at Allentown.

The Eastern Pennsylvania Independent Telephone Association held a very successful meeting at Allentown, Pa., in the territory of the Consolidated Telephone Co. on Thursday and Friday, August 9 and 10.

E. M. Prisk, general manager, and H. H. Weibel, advertising manager, of the Consolidated company, arranged for the entertainment of the members present on Thursday on an elaborate scale.

After an inspection of the Consolidated Telephone building, automobiles were provided and a ride of 40 miles included a visit at the United States Ambulance Training Camp and a tour of the game preserve of Colonel Harry C. Trexler, after which a dinner was served at the Elks' Club and a splendid address delivered by Attorney Lawrence H. Rupp, of Allentown, Pa.

On Friday, at Odd Fellows' Temple, the association meeting was addressed by J. H. Cross, of Philadelphia, Pa., on the subject of "Advertising and Publicity." Mr. Cross has been requested to prepare a paper on the subject of advertising for the information of telephone men in general.

W. S. Vivian, of Chicago, secretary and treasurer of the United States Independent Telephone Association, also delivered an address on general matters. Immediately following, Edward M. Prisk, general manager of Consolidated Telephone Co., opened a general discussion of matters relating to the construction, operation and maintenance of telephone exchanges and toll lines. This general discussion proved to be very interesting, and several questions were brought up, including the following:

Does it pay to solicit service complaints? In view of the constantly increasing cost of dry batteries, has anyone present adopted a satisfactory method of testing cells to determine the remaining life?

Would it not be well to thoroughly instruct our toll operators regarding the importance of charging up overtime minutes?

How often should toll lines be inspected? What is the best method to adopt in order to interest toll operators in properly using our new standard operating rules?

Which companies here represented have recently increased rates, and how did they go about it?

After the transaction of routine business the association members, as guests of the Consolidated company, participated in a luncheon served in the banquet hall of Odd Fellows' Temple.

From Factory and Salesroom

Convention: Indiana, Indianapolis, September 19-20

First to Leave Automatic Electric Co. for Active Service.

W. N. Curtis, of the private exchange department of the Automatic Electric Co., Chicago, is now Captain W. N. Curtis, U. S. R., on active duty with the department quartermaster at Fort Sam Houston, Texas.

Prior to entering the telephone business, Mr. Curtis' experiences have been varied and "checkered," as he puts it. Having once put in some new batteries, in the telephone on the C. Y. ranch near Careyhurst, Wyo., the Automatic Electric Co.'s advertisement attracted his attention. Consequently in December, 1905, he enrolled as apprentice in the Automatic company's switch department.

Several years were spent on maintenance work at Lincoln, Saskatoon, Portland, Butte and Richmond by Mr. Curtis, and in 1909 he returned to the employ of the Automatic company as installer and inspector of the then very few private automatic exchanges.

Early in 1912 Mr. Curtis was selected to go to New Zealand with an exhibit and he spent two years there, spreading the gospel, selling Automatic equipment and installing. Returning to the United States in 1914 he spent two years as commercial tourist for the company.

On March 18, 1916, he entered the private exchange department, not "on the firing line" but "in the trenches," where he served the company until the latter part of May when he was called to service by his country.

Captain W. N. Curtis, U. S. R.

Furnishing Music to Inmates of Hospital by Telephone.

A Chicago concern, states the Popular Science Monthly, has come forward with a "silent music" contrivance that is designed to furnish recreation to inmates of hospitals. With this system installed in a hospital, a continuous and noiseless program of music can be furnished. Each patient may decide for himself or herself whether or not to listen, and if the decision is against such recreation, the patient is not disturbed in any manner.

The mechanism consists of a phonograph attached to a telephone transmitter, which in turn is hooked up to an electrical wiring system that reaches each private room and each bed in the wards. At each wall outlet a watch-case telephone receiver is wired in. The patient desiring to hear the musical program simply lifts this receiver to his ear.

The sending station equipment is located at the office or in any convenient room, and consists, as stated, of an ordinary phonograph, electrically driven, holding the turntable, which carries any disk record. Attached to this machine is a special music transmitter, consisting of a combination of a telephone transmitter with a vibrating diaphragm and needle The needle, following the groove of the record, energizes the diaphragm of the transmitter, which in turn energizes the telephone attached thereto.

Beside the transmitting apparatus is a control box, containing electrical resistances, which energize the transmitting apparatus properly, and binding posts for all connections.

By throwing a switch, a voice trans-

mitter is cut into the system. This enables the operator to announce the names of the records about to be played, to give baseball scores, recitations, war news, and whatever other items may be of interest to his telephone clientele.

Except when this voice transmitter is being used, there is no noise of any description connected with the sending apparatus beyond a light scratching of the needle, for no tone arm or horn is used.

When installing this system in hospitals, in the course of erection, the wiring is made to connect the sending station equipment with outlet jacks at the bedsides. These outlets are all connected in multiple on a single pair of wires, carried along with the regular telephone or signal system.

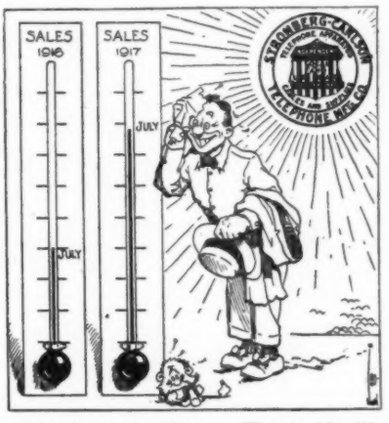
Paragraphs.

THE STANDARD AUGUR CO., of Chicago, has recently been consolidated with the Specialty Device Co., of Cincinnati, Ohio, which will continue to manufacture the Standard company's practical earth augers, well-boring outfits and other specialties.

JULIUS ANDRAE & SONS, Telephone Department, 358-364 Broadway, Milwaukee, Wis., announce that they will have ready for distribution within two or three weeks their new telephone bulletins. The bulletin will be complete in every respect and will feature the principal Andrae telephone specialties. A copy will be promptly sent on request to all interested telephone companies.

August Blotter Calendar of Stromberg-Carlson Company.

"Comfortably warm, thank you!" says Phoney Bill, in speaking of the July sales of the Stromberg-Carlson Telephone Mfg. Co. A glance at the accompanying illustration from the August blotter calendar of the Stromberg-Carlson company, with its "thermometer" showing a comparison of sales for July, 1916, and July of this year, explains the occasion for this terse remark.



"Comfortably Warm, Thank You!"

From a weather standpoint last July was much hotter than that month this year but from a telephonic point of view the Stromberg-Carlson company reports that the sales last month were way ahead of those in July, 1916. That's a condition which every business man strives to produce in his own business—to have a constantly increasing volume of business.

Motor Truck Recommended for Local Deliveries.

The storage committee of the general munitions board of the Council of National Defense has authorized the following statement:

"More and more the motor truck must be used for local deliveries of freight, not only between the plant and freight assembly station, but to consumers at relatively nearby points. This will mean, in many instances, the organization of a joint motor car service by the manufacturers of a given district to insure that as nearly as possible full motor truck loads may be available for each trip."

Record of Telephone Patents

1,230,835. June 26, 1917; filed August 8, 1913. TELEPHONE EXCHANGE SYSTEM; seven claims; Garrison Babcock, Chicago; assigned to Telechronometer Co., Rochester, N. Y. Describes operating means and control for service meters installed at the subscriber's station.

1,230,884. June 26, 1917; filed August 3, 1914. TELEPHONIC APPARATUS; one claim; C. Forgues, Paris, France; assigned to Societe de Lavandeyra & Orner, Paris, France. A combination transmitter and receiver in a casing in the bottom of which is an antiseptic cartridge is covered by this patent. The microtelephone in the position of rest of the apparatus constitutes the cover or lid for the casing.

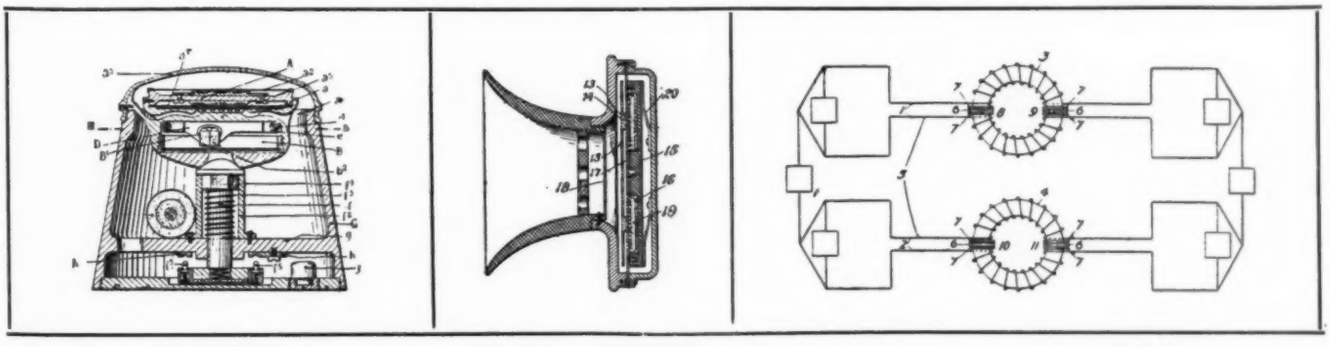
1,230,956. June 26, 1917; filed October 15, 1915. MICROPHONE; two claims; Alexandre Vaugean, Anthony de Lavandeyra and Wm. Garthwaite, Paris, France. A microphone cell is described in which a number of small pieces of carbon in light contact with one another are arranged in contact with positive and negative terminals. It is so supported that the cell moves with an equal degree of freedom in all directions.

1,230,996. June 26, 1917; filed March 2, 1911. TELEPHONE SYSTEM; 61 claims; E. E. Clement, Washington, D. C.; assigned to J. R. Garfield, Cleveland, Ohio. This patent relates to a testing selector switch for use in a semi-automatic system.

1,231,013. June 26, 1917; filed November 18, 1914. AUTOMATIC TELEPHONE EXCHANGE SYSTEM; 33 claims; C. L. Goodrum, New York; assigned to Western Electric Co. In this system automatic switches are adapted to interconnect the telephone lines. Driving magnets are provided for operating the automatic switches and condensers are associated with the magnets to prevent sparking at their contacts.

1,231,024. June 26, 1917; filed May 19, 1915. TELEPHONE EXCHANGE SYSTEM; four claims; E. E. Hinrichsen, New York; assigned to Western Electric Co. The feature of this common battery manual system is a flashing signal in the cord circuit, the circuit for which is completed upon the response of a relay to the opening of a telephone line and its subsequent closing.

1,231,085. June 26, 1917; filed September 22, 1916. TELEPHONE EXCHANGE SYSTEM; seven claims; A. B. Sperry, New York; assigned to Western Electric Co. In this automatic system a set of repeating relays normally control a local grounded stepping circuit of stepping magnets of automatic switches. A double-wound differential relay is associated with the repeating relays and adapted to render



No. 1,230,884. No. 1,231,095. No. 1,231,516.

the grounded stepping circuit inoperative and to render a metallic stepping circuit operative. The metallic circuit is associated with two-wire trunks which extend between automatic switches.

1,231,086. June 26, 1917; filed Nov. 6, 1916. TELEPHONE EXCHANGE SYSTEM; four claims; A. B. Sperry, New York; assigned to Western Electric Co. In this automatic system which is similar to that covered by the preceding patent, a pair of switching relays is associated with the repeating relays and adapted to render the grounded stepping circuit inoperative and to render the metallic circuit operative. A commutator switch controlled by the automatic switch which contains the two-wire trunk group is adapted, when the group is selected, to operate the repeating relays.

1,231,095. June 26, 1917; filed Nov. 11, 1915. TELEPHONE TRANSMITTER; 14 claims; N. Tannaka, New York. In this transmitter a flexible or elastic sheeting is held by the casing and a vibrator and a back electrode part, both including electrodes, are shaped and attached to the sheeting so as to form chambers there between to enclose the electrodes. Granular carbon is placed between and in contact with the front and back electrodes.

1,231,319. June 26, 1917; filed Sept. 17, 1913. AUTOMATIC TELEPHONE SYSTEM; 15 claims; C. S. Winston, Chicago; assigned to Kellogg Switchboard & Supply Co. The feature of this system is a single wound reversing relay which is arranged to operate to reverse the current flow over the calling line response from the station of the called line.

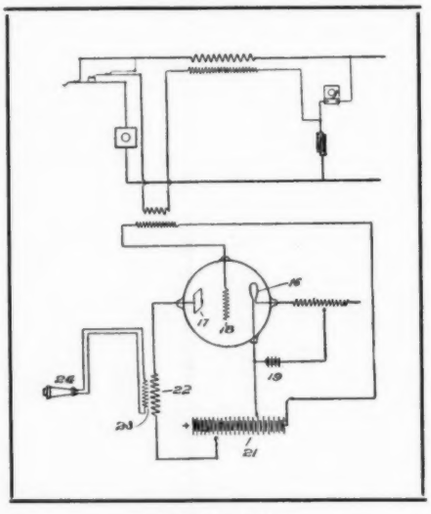
1,231,516. June 26, 1917; filed May 1, 1916. PHANTOM LOADING COIL; four claims; W. Fondiller, New York; assigned to Western Electric Co. This loading coil unit is adapted for use with two physical circuits and a derived phantom circuit. It comprises two toroidal core members with bridges of low reluctance between them at diametrically opposite points. A gap of high reluctance transversely intersects each of the toroidal members and longitudinally bisects the bridges.

1,231,629. July 3, 1917; filed October 12, 1916. TELEPPHONE SWITCHBOARD; two claims; H. H. Lowry, Chicago; assigned to Western Electric Co. The equipment for this switchboard is divided into two portions in each section. Permanent wiring for the line and multiple jacks is placed in one part and the apparatus and connections for the cord circuits are located in the other part. The last-named part is removable from the first part so that cord circuits wired for different classes of service may be readily substituted for others in an exchange equipment without disturbing the apparatus and connections in either the permanently wired or removable portions of the board.

1,231,764. July 3, 1917; filed April 24, 1912. TELEPHONE RELAY; seven claims; F. Lowenstein, New York. An ionic controller having an anode and a cathode suitably spaced apart is connected to a battery. A grid is electrically connected to the telephone talking circuit and interposed between the anode and the cathode. There is a connection from the grid to the battery which is negative with respect to the battery connection of the cathode. The telephone receiver is arranged to be energized from the controller circuit.

1,231,800. July 3, 1917; filed July 30, 1914; TELEPHONE SYSTEM; 15 claims; F. M. Slough, Rochester, N. Y.; assigned to Stromberg-Carlson Telephone Mfg. Co., Rochester, N. Y. In the cord circuit of this system the operator's set is normally connected to a portion of a number of talking strands. When the cord is connected to a called line, normally-open contacts in the talking strand of the cord circuit are closed, thus interrupting the connection of the operator to the cord circuit.

1,231,869. July 3, 1917; filed April 11, 1914. WALL BRACKET FOR TELEPHONE STAND; one claim; W. G. Farley, Cynwyd, Pa.; assigned to Progressive Wire Goods Co., Philadelphia. This wall bracket is made of a single piece of wire bent to form a horizontal base loop with an open rearward end. The wire extends upwardly from the open end of the base loop to form spaced vertical wall engaging parts with places for screws. The wire is then bent horizontally above the base loop to form a pair of spaced arms adapted to



No. 1,231,764.

receive the vertical post of the telephone stand between them.

1,231,922. July 3, 1917; filed November 26, 1915. TELEPHONE EXCHANGE SYSTEM; 17 claims; A. E. Lundell, New York; assigned to Western Electric Co. An automatic trunking system between two exchange offices is described. Calls to be trunked are connected with a service observing desk where the circuit of a signalling device corresponding to the connected telephone line is completed to operate an electromagnetically-controlled switching device which is selectively responsive to currents of different characters.

1,232,087. July 3, 1917; filed January 19, 1916. AUTOMATIC TELEPHONE REGISTER SENDER; 15 claims; F. N. Reeves, Newark, N. J.; A. E. Lundell, New York; assigned to Western Electric Co. A call-storing register has its movement governed by a pair of relays. Provision is made for alternately operating the relays to complete the register-energizing circuits to cause the register to move from one of its positions to the next.

1,232,183. July 3, 1917; filed July 22, 1916. CONTROLLING SYSTEM; 13 claims; H. M. Bascom, Brooklyn, N. Y.; assigned to American Telephone & Telegraph Co. A service-observing system is described. The service observing line includes a circuit controlling relay. A supervisory signal in the connecting circuit is included in the means for normally maintaining two points on opposite sides of the circuit-controlling relay at the same potential. A supervisory relay in the connecting circuit is adapted on energization to withdraw the signal and unbalance the potentials to operate the circuit controlling relay.

1,232,250. July 3, 1917; filed September 8, 1915. SEMI-AUTOMATIC TELEPHONE EXCHANGE SYSTEM; 13 claims; A. H. Dyson, Montclair, N. J.; assigned to Western Electric Co. Means for automatically recording and registering the number of a calling line and automatic switching devices, which are directively operated in accordance with the registration of a calling line so that a talking circuit is established between an interoffice trunk and the calling line, are the features of this patent.

1,232,279. July 3, 1917; filed June 29, 1916. TELEPHONE EXCHANGE SYSTEM; five claims, C. L. Goodrum, New York; assigned to Western Electric Co. A trunking system for an automatic exchange is described. The lines are divided into groups and sub-groups. A number of trunks are common to the main group of lines, there being preferred ones to which the lines of a sub-group normally have access as first choices. A different set of preferred trunks is assigned to each subgroup and provisions is made for making a preferred trunk accessible to the lines of its sub-group whenever one of such groups is idle.

1,232,338. July 3, 1917; filed January 18, 1906. AUTOMATIC TELEPHONE EXCHANGE SYSTEM; 12 claims, J. Wm. Lattig, Rochester, N. Y., and C. L. Goodrum, New York; assigned to Western Electric Co. A relay is provided for each finder switch. The starting circuit for the finder switch is jointly controlled by these relays to produce a momentary current in the starting circuit. The switches are restored on the completion of a communication.

1,232,345. July 3, 1917; filed September 7, 1915. SEMI-AUTOMATIC TELEPHONE SYSTEM; eight claims; A. E. Lundell, New York; assigned to Western Electric Co. An indicating device operates in accordance with a number set up on a register to display the number when the multi-position automatic switch for a connecting circuit taken for use is in a predetermined position. The operator has under her control facilities for returning the switch to the predetermined position after it has progressed to an advanced position.

1,232,496. July 10, 1917; filed October 4, 1915. CALL DISTRIBUTING SYSTEM; three claims; H. P. Clausen, Mt. Vernon, N. Y.; assigned to Western Electric Co. Details for signals associated with a call-distributing system are given in this patent.

1,232,497. July 10, 1917; filed October 21, 1915. TELEPHONE EXCHANGE SYSTEM; 11 claims; H. P. Clausen, Mt. Vernon, N. Y. In this common battery system a supervisory signaling device is associated with the cord circuit. An operating circuit for the signal is completed upon the restoration to the switchhook of the receiver at the calling station before the receiver at the called station is removed from its switchhook, thereby to cause the signaling device to furnish a signal of one indication. A circuit-changing switch operates to decrease the resistance of the operating circuit at the expiration of a predetermined period, thereby causing the signaling device to furnish a signal of another indication.

1,232,498. July 10, 1917; filed August 30, 1916. AUTOMATIC TESTING SYSTEM; eight claims; H. P. Clausen, Mt. Vernon, N. Y.; assigned to Western Electric Co.

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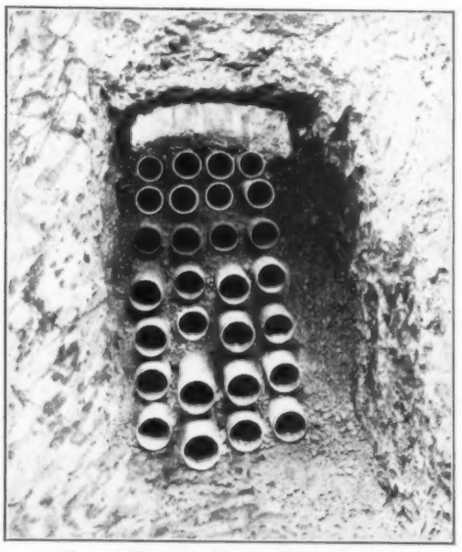

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In this system sets of terminals are connected to the telephone line circuits. Brushes are arranged to be successively and automatically connected to the sets of terminals and detect and record unstandard conditions in the circuits.

1,232,499. July 10, 1917; filed October 25, 1916. ELECTRIC SIGNALING SYSTEM; eight claims; H. P. Clausen, Mt. Vernon, N. Y.; assigned to Western Electric Co. A signaling system for use between operators is described in this patent. Wheels at the receiving station bearing signaling characters on their peripheries are electrically operated through tuned reeds by means of current of different characteristics.

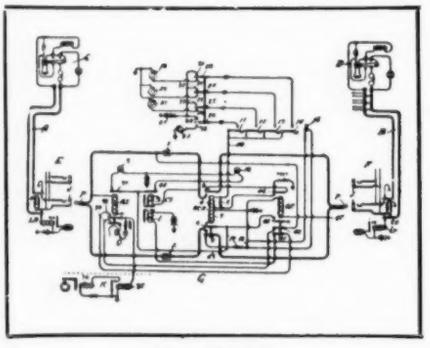
1,232,507. July 10, 1917; filed November 21, 1916. TELEPHONE EXCHANGE SYSTEM; seven claims H. L. Darrah, Chathan, N. J.; assigned to Western Electric Co. A cord circuit for a private branch exchange is described. A relay is responsive to the connection of the cord circuit with the calling line and establishes a low impedance bridge across the talking strands of the cord circuit. Another relay varies the impedance of the bridge upon the removal from its switchhook of the receiver at the station on the called line connected with the other end of the cord circuit.

1,232,514. July 10, 1917; filed November 15, 1915. ELECTRIC AMPLIFIER SYSTEM; one claim; H. C. Egerton, Passaic, N. J.; assigned to Western Electric Co. In this telephone amplifier system, electromagnetic means are controlled by a primary transmitter and in turn control a transmitter element. Provision is made to supply current to the transmitter element at a potential less than the potential of the common source of current supply for the system. The current at the reduced potential may be obtained from different portions of the common source of supply.

1,232,515. July 10, 1917; filed February 7, 1916. RECEIVER CASE; four claims; H. C. Egerton, Passaic, N. J.; assigned to Western Electric Co. A moisture-proof case for receivers is described.

1,232,580. July 10, 1917; filed October 23, 1915. SELECTIVE CONTROLLING SYSTEM; 11 claims; A. E. Lundell, New York; assigned to Western Electric Co. This system relates to a registering system for automatic exchanges. A sender operates switches electromagnetically in accordance with its adjustment.

ively connected with the transmitter circuit, there being a contact in each of these circuits controlled by the switchhook. An impulse-sending mechanism is adapted to open first the contact in the receiver circuit and then the contact in the transmitter circuit and to close the



No. 1,233,196.

contact in the transmitter circuit first and then that in the receiver circuit.

1,232,582. July 10, 1917; filed January 14, 1916. AUTOMATIC TELEPHONE SYSTEM; 13 claims; A. E. Lundell, New York; assigned to Western Electric Co. In this system connection between lines may be made entirely automatically or with the assistance of an operator. There are a number of normally-inactive brush sets on the selector switch with a magnet provided for each brush set for controlling its activity. An operator's sending device includes keys and registers for recording the designation of a wanted line. Contacts on the registers are provided for selectively closing the circuits of the magnets.

1,232,884. July 10, 1917; filed November 21, 1916. OPERATOR'S TELEPHONE CIRCUIT; five claims; O. E. Benson, Glen Ridge, N. J.; assigned to Western Electric Co. In this two-conductor circuit a high non-inductive bridge is grounded at its middle point and a high impedance bridge which includes an induction coil secondary winding for the circuit, is grounded at its middle point. Condensers are placed in the high impedance bridge and a receiver connected to the secondary winding in symmetrical relation to the grounded middle point. A primary winding is in inductive relation to the secondary winding and has in circuit with it a transmitter and a source of current.

1,232,891. July 10, 1917; filed August 5, 1915. TELEPHONE METER OR REGISTER FOR MEASURING TELEPHONE CALLS; eight claims; G. I. Bruschke, Chicago. A call-registering device for the subscriber's station is covered by this patent. Two polarized electro-solenoids are included in a branch circuit of the telephone line. The mechanism of these solenoids is operated by the armatures to direct either the debit or credit counter according to their positions. Positive or negative direct current may be impressed upon the line at the central office to energize the solenoids and cause them to deflect either armature.

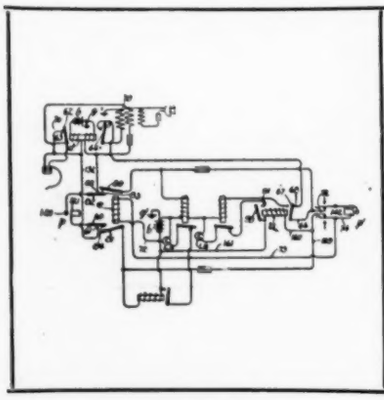
1,232,943. July 10, 1917; filed September 11, 1916. TELEPHONE EXCHANGE SYSTEM; 14 claims; A. E. Lundell, New York; assigned to Western Electric Co. The feature of this automatic system is the provision of a relay by the operation of which ringing current may be applied to the called subscriber's line a desired number of times under the control of the calling subscriber.

1,232,944. July 10, 1917; filed September 22, 1915. TELEPHONE SIGNALING SYSTEM; 14 claims; A. E. Lundell, New York; assigned to Western Electric Co. This signaling system for use between offices is adapted for semi-automatic exchanges. A called-number-indicating device is located at the second office and is common to the trunks between the offices. The controlling apparatus for this device is located at the first office. A number of different selective signaling means are provided for the stations associated with the called line. Operation of the indicating device actuates apparatus for associating a signaling means with the called line.

1,233,031. July 10, 1917; filed June 12, 1916; CONNECTING PLUG; two claims; F. B. Cook, Chicago; assigned to Frank B. Cook Co., Chicago. The feature of this switchboard plug is a filling of insulation within the bore of the contact portion through which the conductor passes. This conductor is insulated previous to its insertion within the plug to prevent the filling of insulation from forcing it into engagement with the tubular contact.

1,233,037. July 10, 1917; filed February 25, 1914. FIRE ALARM SYSTEM FOR TELEPHONE EXCHANGES USING LINE DISTRIBUTERS; 19 claims; D. G. Dee, Rochester, N. Y.; assigned to R. H. Rogers, Rochester, N. Y. Means for connecting fire alarm apparatus to an automatic telephone circuit and disconnecting it after the alarm has been sounded, are described.

1,233,196. July 10, 1917; filed April 10,



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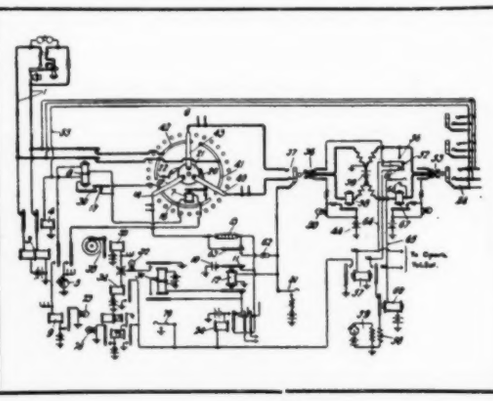

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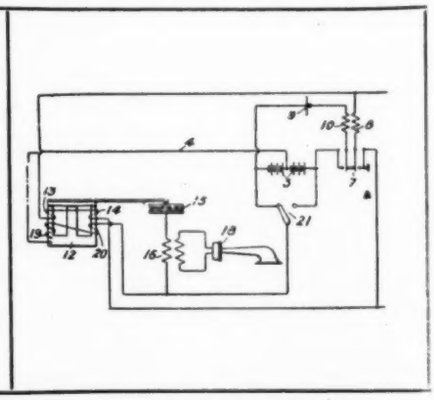

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1,232,581. July 10, 1917; filed January 3, 1916. SUBSTATION TELEPHONE SET: three claims; A. E. Lundell, New York; assigned to Western Electric Co. The arrangement of the wiring in an automatic subscriber's instrument is described. The receiver circuit is induct-

1913. AUTOMATIC RINGING AND SECRET SERVICE TELEPHONE SYSTEM; 20 claims; H. D. Currier, Chicago; assigned to Kellogg Switchboard & Supply Co. The feature of this system is a control relay which is connected in circuit with a calling line when the cord circuit is connected to it. An

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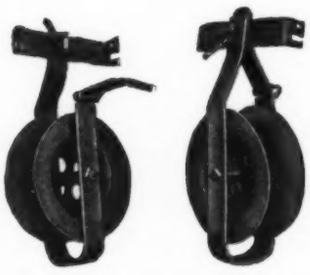

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initial energizing circuit for the relay includes normally-closed contracts. A maintaining circuit has a normally-open contact controlled by the relay which, when the relay is initially energized, is closed to render the maintaining circuit effective to cause a continued operation of the control relay to interrupt the normally-closed contact.

1,233,620. July 17, 1917; filed May 22, 1916. TELEPHONE CALL REGISTERING DEVICE; one claim. V. Thompson, Vancouver, B. C., Canada. A 5, 10 and 25-cent pay station device is described. When the coins are deposited, and the connection made, a registering device is operated.

1,233,766. July 17, 1917; filed October 13, 1915. DUPLEX CIRCUIT; 23 claims. L. Espenschied, Brooklyn, N. Y.; assigned to American Telephone & Telegraph Co. Two physical circuits are so connected as to form a phantom circuit. Windings are included in the conductors of each physical circuit in oppositely disposed pairs. The windings belonging to each physical circuit are loosely coupled, while those belonging to different circuits are closely coupled. The windings of the circuit pairs are separated by 90 degrees from one another and are adapted to produce inductance effects in the physical circuits and also in the phantom circuit.

1,233,767. July 17, 1917; filed October 13, 1915. DUPLEX CIRCUIT; 8 claims. L. Espenschied, Brooklyn, N. Y.; assigned to American Telephone & Telegraph Co. This is a modification of the preceding patent. The loading coils in the conductors of the physical circuits are inductively independent, while the self-inductances of their windings are effective in the phantom circuit.

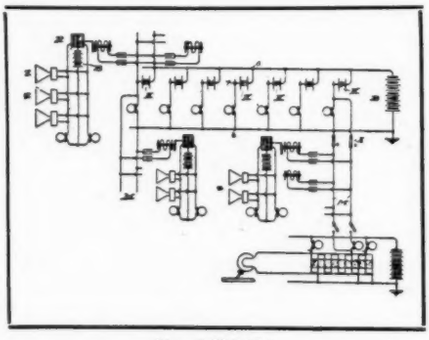
1,233,768. July 17, 1917; filed October 13, 1915. INDUCTANCE DEVICE; 18 claims; L. Espenschied, Brooklyn, N. Y.; assigned to American Telephone & Telegraph Co. This loading coil for duplex circuits comprises inner and outer core portions, each in the form of a closed figure, with other core portions connecting the closed core parts. A number of pairs of line windings co-operate with the core portions, the pairs being differently disposed in respect to the core portions and the windings of the different pairs being upon the same parts of the core portions.

1,233,769. July 17, 1917; filed October 13, 1915; DUPLEX CIRCUIT; 8 claims; L. Espenschied, Brooklyn, N. Y.; assigned to American Telephone & Telegraph Co. A loading coil for use in connection with two physical circuits which are combined to form a phantom circuit is described. It consists of a magnetic core having two separate portions, each forming a closed figure, and intermediate portions. A winding for each line conductor is situated upon the intermediate portions of the core.

1,233,819. July 17, 1917; filed September 11, 1915. AUTOMATIC TELEPHONE EXCHANGE SYSTEM; 8 claims; A. B. Sperry, New York; assigned to Western Electric Co. The feature of this automatic system is a signaling arrangement. A relay for each subscriber's station and under its control is located in the central office. A switching device is operated by either of the relays for connecting signaling apparatus with the line so that signaling current is projected to the other station which is connected for conversation.

1,233,830. July 17, 1917; filed December 18, 1914. TELEPHONE EXCHANGE SYSTEM; 33 claims; J. L. Wright, Cleveland, Ohio; assigned to Western Electric Co. A semi-automatic exchange system is described. Impulse conductors extend from an operator's position to each of a pair of permanently mated switches, each of which is capable of two selective operations. An impulse-transmitting device is associated with the operator's position and arranged for simultaneous connection with the trunk conductors to directly control simultaneously the movement of each of the switches.

1,233,831. July 17, 1917; filed January 31, 1916. SELECTOR SWITCH; six claims; A. H. Adams, Sparkill, N. Y., and A. E. Lundell, New York, N. Y.; assigned to Western Electric Co. The motor magnet of this selector switch for automatic systems has a single winding with an energizing circuit. The energizing circuit is closed through an armature and front contact of a relay and an interrupter to cause the initial movement of an automatic switch. A circuit for the winding of the magnet is closed through the armature and back contact of the relay and interrupter to continue the movement of the switch. Provision is made for energizing the relay to stop the switch



No. 1,234,134.

when the terminals of an idle outgoing line are engaged.

1,233,837. July 17, 1917; filed November 11, 1912. TELEPHONE EXCHANGE SYSTEM; 10 claims; J. D. Bonnar, Ashtabula, Ohio; assigned to J. R. Garfield, Cleveland, Ohio. The feature of this semi-automatic system is the provision of means under control of the calling subscriber's line to cause the primary selector switch to automatically select the calling line, the secondary switch to automatically select the primary trunk, and the tertiary switch to select the operator's position.

1,233,870. July 17, 1917; filed May 24, 1916; AUTOMATIC TELEPHONE SYSTEM; 13 claims; C. L. Goodrum, New York; assigned to Western Electric Co. This patent relates particularly to the finder switches to which the telephone lines are multipled. Upon the initiation of a call the starter circuit for the finders is closed. This circuit leads through contacts which are open during the release of busy line finders. Provision is made for preserving the continuity of the starter circuit during the release of the busy finders and until the pre-selected finder is connected with the calling line.

1,233,891. July 17, 1917; filed October 4, 1915. AUTOMATIC TELEPHONE SYSTEM; five claims; A. E. Lundell, New York; assigned to Western Electric Co. A common relay is adapted to be included in circuit with any of the selector stepping magnets and is adapted, when energized, to cause the relay to lock up in succession. The energization of a predetermined relay of the series unlocks the relay in succession. The unlocking of the last-named relay again causes the relay to lock up successively. The operation of the relays is terminated by the de-energization of the common relays.

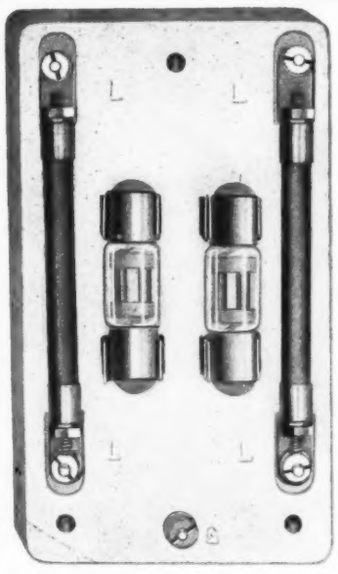
1,233,892. July 17, 1917; filed November 6, 1915. SEMI-AUTOMATIC TELEPHONE SYSTEM; five claims; A. E. Lundell, New York; assigned to Western Electric Co. In this semi-automatic system a number of "A" operators' positions at the central office are adapted to be connected to any of the subscribers' lines. A "B" operator's position is accessible at any of the "A" operators' positions, a number of trunks extending between the "A" and "B" positions with sending apparatus common to them. The "B" operator is provided with equipment for initiating the sending operation while means connected to any trunk and under the "B" operator's control cause the connection of the trunk to the sending apparatus. The "A" operator is provided with means for connecting the trunk to a calling subscriber's line. The sending apparatus has associated with it apparatus which is actuated by equipment connected with another trunk and prior to the initiation of the sending operation for disassociating the first trunk from the sending apparatus and associating the second trunk with it.

1,233,893. July 17, 1917; filed January 5, 1916. TELEPHONE EXCHANGE SYSTEM; six claims; A. E. Lundell, New York; assigned to Western Electric Co. The feature of this automatic system is the provision of mechanism for applying an electrical busy potential to the terminals of the line. Interrupters are provided which control the effectiveness of the busy potential and also the means for operating the selective switching device.

1,233,894. July 17, 1917; filed September 22, 1916. TELEPHONE EXCHANGE SYSTEM; seven claims; A. E. Lundell, New York; assigned to Western Electric Co. In this automatic system a sequence switch having a number of operating positions is associated with the selector switch. A starting circuit for all of the motors provided for each of the finder switches is closed in a certain position of the sequence switch and is controlled by a relay. An allotter renders a single motor responsive to the starting circuit. Upon the successful operation of one of the finders the allotter is actuated to render another motor responsive to the starting circuit. Provision is made for actuating the relay to open the starting circuit during the time elapsing between the operation of the allotter and the movement of the sequence switch out of the certain position.

1,233,940. July 17, 1917; filed March 7, 1913. TELEPHONE EXCHANGE SYSTEM; 70 claims; H. G. Webster, Chicago; assigned to J. R. Garfield, Cleveland, Ohio. In this semi-automatic system the subscribers' lines are arranged in groups, with a group of "tens" and "units" relays associated with them. A "tens" starter conductor is common to each group of lines, while "units" starting conductors are individual to each line. There is an auxiliary set of relays provided, each one being individual to a group of lines. When an auxiliary relay is actuated the "units" starting conductors of a group of lines are connected to a set of "units" relays.

1,234,134. July 24, 1917; filed July 21, 1913. LOUD-SPEAKING TELEPHONE SYSTEM; six claims; J. J. Comer, Chicago; assigned to Automatic Enunciator Co., Chicago. A fixed resistance is connected in series with a variable resistance trans-



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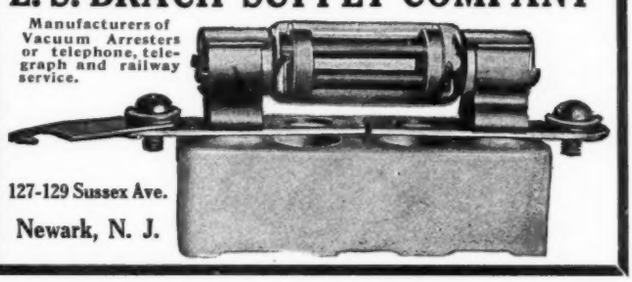

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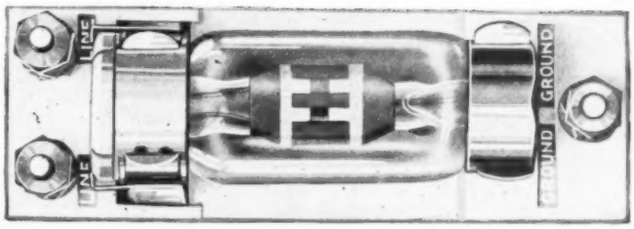

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mitter, and a receiving circuit is connected directly around the transmitter. A second receiving circuit is connected directly around the fixed resistance and one or more amplifiers are bridged across each of the receiving circuits. One or more loud-speaking receivers are operatively connected with each of the amplifiers.

1,234,187. July 24, 1917; filed May 25, 1916. TELEPHONE EXCHANGE SYSTEM; three claims; A. E. Lundell, New York; assigned to Western Electric Co. In this semi-automatic exchange an automatic switch is power-driven under control of a sender. A line relay at the switch is in circuit with the sender and is energized only while the sender is operated. A circuit for the power control relay is closed at the front contact of the line relay. A substitute circuit for the power control relay includes test terminals of busy trunks.

1,234,246. July 24, 1917; filed September 16, 1914. TELEPHONE EXCHANGE SYSTEM; 21 claims; J. L. Wright, Cleveland, Ohio; assigned to Western Electric Co. The feature of this automatic exchange system is the provision of means associated with the automatic switch, which has a row of test contacts for selecting the last contact in the row. When the last contact is selected the preceding contact passed over by the switch in making the selection is then rendered selectable.

1,234,610. July 24, 1917; filed April 17, 1914. AUTOMATIC OR SEMI-AUTOMATIC TELEPHONE EXCHANGE SYSTEM; eight claims; G. A. Betulander, Sodertorns, Villastad, Sweden, and N. G. Palmgren, London, England. Connecting relays effect connections between the subscribers' lines and the incoming and outgoing trunk lines by means of intermediate lines which are allotted in common to each of the groups into which the subscribers' lines are divided. Cut-off relays are individually allotted to the subscribers and adapted, upon being energized, to open a contact included in the operating circuit of the connecting relays related to the corresponding subscriber's line, thus marking that line as busy during the duration of the interconnection.

1,234,613. July 24, 1917; filed December 6, 1916. TELEPHONE INSTRUMENT; three claims; G. Boissonnault, New York; assigned to Micropho-Detector Co., New York. In this microphone an adjustable carbon pencil is located in a recess block which is supported from the case. A series of carbon particles is also located in the recess but in front of the carbon pencil.

1,234,623. July 24, 1917; filed January 19, 1916. TELEPHONE SYSTEM; two claims; L. C. Bygrade, London, England; assigned to Relay Automatic Telephone Co., London, England. In this relay automatic system each of a group of relays is adapted to connect each of the line wires to a line. A second group of relays, capable of being actuated alone or in combination, is adapted to connect any one of the wires to the trunk.

1,234,649. July 24, 1917; filed September 20, 1916. TELEPHONE TRANSMITTER; three claims; J. P. Ferriter, Jacksonville, Fla.; assigned one-half to P. J. Peters, Peters, Fla. The relatively movable elements of a condenser are mechanically connected with the transmitter diaphragm. A source of continuous current has its poles connected with the respective movable elements, while an induction coil has its terminals connected with the respective fixed elements.

1,234,650. July 24, 1917; filed September 20, 1916. BUZZER TRANSMITTER; two claims; J. P. Ferriter Jacksonville, Fla., assigned one-half to P. J. Peters, Peters, Fla. This buzzer transmitter comprises a long, slender coil enclosed in a metal tube. An interrupter is placed in the circuit of the coil at one end and the microphonic transmitter at the opposite end, including an armature adjacent to and out of contact with the core of the coil.

1,234,651. July 24, 1917; filed September 20, 1916. TELEPHONE TALKING COIL AND CIRCUIT CONNECTION; three claims; J. P. Ferriter, Jacksonville, Fla.; assigned one-half to P. J. Peters, Peters, Fla. The talking coil consists of a pair of primary windings composed of two twisted wires helically wound having a core within the windings. A secondary winding consists of a single wire wound around the primary winding.

1,234,874. July 31, 1917; filed April 27, 1916. TELEPHONE INDEX; three claims: F. W. Colby, Boston, Mass. This index is of the roller type enclosed in a cylindrical casing. Spring means are provided for keeping the index in a roll condition within the casing.

1,235,186. July 31, 1917; filed September 8, 1905. TELEPHONE EXCHANGE SYSTEM; 20 claims; E. E. Clement, Washington, D. C.; assigned to J. R. Garfield, Cleveland, Ohio. The feature of this semi-automatic system is the provision of selector switches connected in pairs. One switch of a pair is adapted to select the calling line and the other to select the first idle connecting apparatus.

1,235,204. July 31, 1917; filed June 26, 1916. TELEPHONE TRANSMITTER; three claims; E. L. Holmes and E. Johnson, Jamestown, N. Y. A spring press deadener for the transmitter diaphragm is the feature. A ring completely surrounds the transmitter mouthpiece so as to be operable at any point peripherally of the mouthpiece. Provision is made for connecting the ring and the deadener.

1,235,301. July 31, 1917; filed March 30, 1909. MEASURED SERVICE TELEPHONE SYSTEM; 19 claims; J. Erickson, Chicago; assigned to Automatic Electric Co. This instrument cut-out device is intended for automatic systems. A short circuit is normally closed around the impulse-transmitting device at the subscriber's station, while there is a normally-open short circuit around the transmitter. A measured service device is provided with means for opening the first short circuit, closing the second, then for opening the second short circuit to enable the subscriber to use the transmitter.

1,235,302. July 31, 1917; filed August 15, 1912. TELEPHONE SYSTEM; 23 claims; T. H. Ferguson, Oak Park, Ill.; assigned to Kellogg Switchboard & Supply Co. Link circuit arrangements for an automatic system are described. Provision is made for giving a passive contact three different electrical conditions. A number of relays are associated with a co-operative wiper which engages the passive contact. By means of these relays three different circuit connections corresponding respectively to the three different conditions of the passive contact are established.

1,235,510. July 31, 1917; filed March 27, 1915. MICROPHONE; five claims; E. M. Campbell, Tigerstedt, Copenhagen, Denmark. Details of construction for a variable contact in a microphone are given.

1,235,599. August 7, 1917; filed November 14, 1916. TELEPHONE EXCHANGE SYSTEM; six claims; F. N. Reeves, Newark, N. J.; assigned to Western Electric Co. In this semi-automatic system three electrical paths are provided, over any one of which connection may be established between the operator's telephone set and a desired link circuit. Provision is made to close these paths at desired times.

1,235,688. August 7, 1917; filed June 8, 1915. TELEPHONE EXCHANGE SYSTEM; six claims; E. E. Hinrichsen, New York; assigned to Western Electric Co. The feature of this system is a switching operator's connecting circuit which is adapted to be connected with a subscriber's line at the same time with a regular cord circuit. A manually-actuated switch is associated with the operator's connecting circuit and controls apparatus whereby the operator may notify a subscriber on a busy line regarding a waiting call. Signaling means are automatically actuated when the cord circuit and the operator's connecting circuit are simultaneously connected with the subscribers' lines.

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